Institutions and Investment Climate for Small Entrepreneurship in Developing Countries.

by

Matthieu Chemin

Submitted to the University of London
in partial fulfillment of the requirements for the degree of

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Abstract

It is well recognised today that improving the investment climate fosters productive private investment and is the key to sustainable growth. However, the question remains whether an improvement in the investment climate would benefit the poor. In this thesis, I focus in particular on two institutions of prime importance for small informal entrepreneurs in developing countries who lack bargaining power and resources: the courts to enforce contracts and the financial markets to get access to credit.

Chapter 2 examines how the case pendency rate in state courts in India affects the contracting behaviour of small non-agricultural informal firms. My estimates suggest that a slow judiciary implies more breaches of contract, discourages firms from undertaking relationship-specific investments, impedes the access of firms to formal financial institutions, and favours inefficient dynasties.

This chapter leaves an important question open. Chapter 3 examines the reasons as to why the judiciary is so congested in India. I find that amendments increasing the number or complexity of procedures to be followed by the Courts and that the ambiguity in the Code of Civil Procedure increase the expected duration of a trial in High Courts. Using the spatial and temporal variation in the enactment of amendments and occurrence of conflicting decisions as instrumental variables for the expected duration of a trial in High Court, I am then able to measure the impact of judiciary's speed on credit markets, agricultural development and manufacturing performance.

Another key feature of a good investment climate is the access to credit markets. Chapter 4 assesses how an improvement in the access to finance through microfinance can benefit the poor directly. Using the technique of matching, this chapter shows a positive effect of microfinance on the expenditure per capita, the supply of labour, the level of enrolment in school of boys and girls. For instance, participants spend 3% more on average than non-participants. Interestingly, participants do not spend more than non-participants in treatment villages. This seems to indicate positive externalities.

Contents

List of Figures

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Chapter 1

An Overview of the Thesis

1.1 Introduction

It is well recognised today that improving the investment climate fosters productive private investment, creates jobs and is the key to sustainable growth. However, the question remains whether an improvement in the investment climate would benefit the poor. Proponents of the investment climate view argue that economic growth is good for the poor: incomes of the poor rise by a one-to-one ratio with average income. They also claim that a better investment climate improve the lives of the poor directly because many poor people are themselves entrepreneurs. Skeptics criticize the one-to-one relationship on econometric grounds. They also argue that the poor entrepreneurs are often in the informal sector and therefore not affected by the official regulatory environment measured by researchers today.

In this thesis, I will focus in particular on two institutions of prime importance for small informal entrepreneurs in developing countries who lack bargaining power and resources: the courts to enforce contracts and the financial markets to get access to credit. To study how an improvement in the investment climate can benefit the poor directly, I will focus first on a particular institution that can affect the bargaining power of the poor: the judiciary. To examine how slow courts can affect the lives of the poor, I will

concentrate on small informal non-agricultural firms in India and see if slow courts shape their contracting behaviour. I will then explain why the judiciary is so slow in India and suggest some policy implications. Finally, I will turn to one type of credit institution that expands access to credit for the poor: microfinance, which aims to provide credit of very small amounts to the poor, using group-lending strategies to improve the repayment rate and solve the information asymmetry problem. I will study the example of the Grameen Bank in Bangladesh and see if the loans actually benefit poor people.

The main contribution of my thesis is the microeconomic study of the relationship between investment climate and poverty. Instead of using macroeconomic cross-country regressions and relying on a one-to-one relationship between incomes of the poor and average incomes, I use rich microeconomic datasets to asses directly the impact of two institutional features, enforcement of contracts and access to finance on the lives of the poor and to learn the exact mechanisms through which the investment climate affects the poor.

The remainder of this chapter is organised as follows. Section 1.2 motivates the thesis. Section 1.3 gives an overview of each chapter and is followed by the main results in Section 1.4.

1.2 Motivation

After the relative failure of the import-substitution strategy, the "Washington Consensus" was promoted by international organizations as the development policy in the 1990s. It consisted in particular in privatisation, opening up of trade and deregulation. The results of this reform were varied and a number of analysts wondered whether these reforms provided sufficient conditions to guarantee economic development. What is lacking, according to these analysts, is the adequate institutional framework, which would stimulate investment and allow the market to operate efficiently. This led international organisations such as the World Bank to focus upon changing institutions. New sources of invest-

ment climate data were collected. The "Doing Business" project develops benchmark information on the operation of various regulatory regimes in more than 130 countries. It reports on the costs of doing business for a defined hypothetical firm and transaction based on the views of selected local experts (lawyers, accountants).The underlying information includes the time and costs of complying with various policy and regulatory frameworks. The topics studied are "Starting a Business", "Hiring and Firing Workers", "Registering Property", "Protecting Investors", "Closing a Business", "Dealing with Licenses", "Paying Taxes", "Trading Across Borders", "Getting Credit" and "Enforcing Contracts". The procedural complexity, time, cost and uncertainty can then be linked to measures of economic performance. Investment Climate surveys are also collected. Large random samples of firms have been interviewed to collect assessments of constraints facing firms as well as objective quantitative data on measures of the investment climate and firm performance. This allows investment climate indicators to be linked with firm performance to better understand their impact on productivity, investment decisions, and employment decisions. In many cases subnational jurisdictions are included, capturing variations across locations within a country. These sources of investment climate data allows the World Bank to provide guidelines to create or modernise the economic institutions of capitalism, which shape the environment in which economic activity occurs

However, the question remains whether an improvement in the investment climate would benefit the poor. Indeed, the title of the World Development Report 2005, a synthesis of these projects, is "A Better Investment Climate for Everyone", not just for the poor. The justification that a better investment climate would benefit the poor relies on two arguments. First, economic growth is good for the poor: incomes of the poor rise by a one-to-one ratio with average income. Therefore, any policy aiming at improving economic growth such as "a better investment climate for everyone" improves incomes of the poor. This statement relies on a macroeconomic cross country regression in Dollar (2002). The main econometric concerns are the lack of comparability across countries but more importantly the lack of any identification strategy. There is also evidence that

the level of inequality in a society affects the way growth translates into rising incomes for the poor. It is not just that poor people's share of income is relatively smaller in a more unequal society; it also rises by less than one-for-one with average incomes. Second, a better investment climate improves the lives of the poor directly because many poor people are themselves entrepreneurs. As the World Development Report says, "hundreds of millions of poor people in developing countries make their living as microentrepreneurs - as farmers, street vendors, homeworkers and in a range of other occupations". However, the focus in the "Doing Business" project is largely on formal firms. Certain topics, such as "Starting a Business", "Hiring and Firing Workers", "Protecting Investors", "Closing a Business", "Dealing with Licenses", "Paying Taxes" and "Trading Across Borders" seem less appropriate for small informal firms. Moreover, despite the desire to interview firms of all sizes, the emphasis in Investment Climate surveys and in the "World Business Environment Survey" is on formal firms. The amount of information one can gather about small informal microentrepreneurs is therefore limited from these new sources of data.

In this thesis, I will focus in particular on two items of this list of prime importance for small informal entrepreneurs in developing countries who lack bargaining power and resources: enforcing contracts and getting finance.

Slow courts make the possibility of compensation in case of a breach of contract remote. Theoretically, it is well know that imperfect contract enforcement can have three types of consequences on economic agents: adverse selection, statistical discrimination and moral hazard.

Potential debtors differ in how likely they are to comply with a particular contract. Whenever their characteristics cannot be readily assessed, the potential for adverse selection arises: debtors of the wrong type may enter into a contract knowing that they are unlikely to satisfy their obligations but cannot be forced to comply. As a result creditors may refuse to contract even at terms that appear very favourable because they fear attracting bad types. Transactions then typically become rationed. Investigating

the other party's type is another response to the dangers of adverse selection. Firms will want to know whether trade partners are competent in their business and interested in establishing a long-term relationship, an indicator that they will be able to repay. Collecting information on potential trading partners is costly. To economize on screening costs, firms may simply infer each other's type from easily observable characteristics like sex, race, or ethnicity. Small differences in average type across population with different observable characteristics can then lead to discrimination. Moral hazard is another type of incentive problem that is likely to occur in commercial contracts. Success in business is influenced by the diligence and care with which firms conduct their operations. Moral hazard can arise even if the creditor perfectly observes the actions of the debtor, the fact that a contract is not perfectly and costlessly enforceable is sufficient. The most common form of incentive is the implicit promise of continued transactions as long as performance is satisfactory and foul play is not suspected.

Credit is essential in poor rural economies in a variety of ways. It is required to finance working capital and investment in fixed capital, particularly among farmers too poor to accumulate much saving. It is an important instrument for smoothing consumption, in a context where incomes typically experience large seasonal fluctuations. Moreover, unusual events such as illnesses or weddings often create a pressing need to borrow. Apart from the intrinsic benefit of being able to weather such shocks, availability of credit reduces reluctance to adopt technologies that raise both mean levels and riskiness of incomes. The credit market thus affects output, investment, technology choices and inequality. A significant fraction of credit transactions in underdeveloped countries still takes place in the informal sector, in spite of serious government efforts to channel credit directly via its own banks, or by regulating commercial banks. This is largely because poorer farmers lack sufficient assets to put up as collateral—a usual prerequisite for borrowing from banks. However even informal credit markets are characterised by significant credit rationing, whereby borrowers are unable to borrow all they want, or some loan applicants are unable to borrow at all. This is well understood today: the

world of informal credit is one of asymmetric information and incentive problems. There are a number of broad strands in the literature, focusing respectively on adverse selection (hidden information) and moral hazard (hidden action).

The adverse selection theory of credit markets originates with the paper by Stiglitz and Weiss (1981). The theory rests on two main assumptions: that lenders cannot distinguish between borrowers of different degrees of risk, and that loan contracts are subject to limited liability (i.e., if project returns are less than debt obligations, the borrower bears no responsibility to pay out of pocket). The analysis is restricted to involuntary default, i.e., it assumes that borrowers repay loans when they have the means to do so. In a world with simple debt contracts between risk-neutral borrowers and lenders, the presence of limited liability of borrowers imparts a preference for risk among borrowers, and a corresponding aversion to risk among lenders. This is because limited liability on the part of borrowers implies that lenders bear all the downside risk. On the other hand, all returns above the loan repayment obligation accrues to borrowers. Raising interest rates then affects the profitability of low risk borrowers disproportionately, causing them to drop out of the applicant pool. This leads to an adverse compositional effect — higher interest rates increase the average riskiness of the applicant pool. At very high interest rates, the only applicants are borrowers who could potentially generate very high returns (but presumably with small probability). Since lenders' preferences over project risk run counter to those of borrowers, they may hold interest rates at levels below market-clearing and ration borrowers in order to achieve a better composition and lower risk in their portfolio. Excess demand in the credit market may persist even in the face of competition and flexible interest rates. Stiglitz and Weiss' theory was designed to apply quite generally, rather than in the specific context of informal credit in developing countries. In the latter context, the theory has often been criticized for its underlying assumption that lenders are not aware of borrower characteristics.

However, if the distribution of returns from the investment is affected by the borrower's actions, observability and monitoring will be a problem even for lenders who live

in close proximity. Limited liability could then increase default risk by reducing the borrower's effort in avoiding low yield states, rather than adversely affecting the composition of the loan applicant pool. This is precisely the moral hazard model. Higher interest rates cause the problem of debt overhang — a highly indebted farmer has very little stake in ensuring a good harvest (i.e., remaining solvent), since the large loan repayments this outcome occasions imply that he captures only a small portion of the returns from the harvest. Keeping this in mind, lenders will be reluctant to raise interest rates beyond some level. As in the adverse selection theory, the interest rate may not rise enough to guarantee that all loan applicants secure credit, in times when loanable funds are limited. In general, the volume of credit and level of effort is less than first-best.

To conclude, inefficient courts particularly affect poor small informal entrepreneurs who lack extra legal bargaining power. Moreover, poor small entrepreneurs are affected by rationed credit supply because they lack the collateral to access finance and are not previously known from banks.

1.3 Description of Thesis

This thesis aims at evaluating how an improvement in the investment climate will affect the lives of the poor informal entrepreneurs. In the absence of good contract enforcement, trade and credit are restricted to a small community of people that has developed informal relations through kinship, repeated dealings with each other, or the security of available assets. Slow courts discourage entrepreneurs from entering in new relationships, engaging in more complex business transactions and producing more sophisticated goods and services. Chapter 2 studies how slow courts can affect the lives of the poor. I examine small informal non-agricultural firms in India and see if slow courts shape their contracting behaviour. I choose India because the problem of arrears is especially large: there were 3.1 million cases pending in India's 21 High Courts and 20 million in its subordinate courts in 2000. I also exploit the variation across states in the slowness of the courts.

I then relate this variable to information on the contracting behaviour of 170,000 small informal non-agricultural firms from the 55th round of the National Sample Survey of 2000 collected in India. To date, the literature on the links between institutions, contract enforcement and economic performance has been largely macroeconomic. In contrast, I try to move this literature in a more microeconomic direction. I focus on one specific measure of institutional quality, the speed of the judiciary, which I can evaluate in an objective fashion. I then examine how this measure affects the contracting behaviour and the economic performance in a large representative sample of small non-agricultural firms in India. This dataset is unique in the sense that an array of questions are asked of firm owners concerning breaches of contract, nature of the contracts signed, access to credit, corporate ownership. This type of information is typically not available in firm-level datasets. Also, by working within a single country, I am able to control for a range of factors and influences which cannot be as convincingly controlled for in cross country data. In this sense, my chapter is in the spirit of recent papers which exploit policy differences across Indian states. Besley and Burgess (2004), for example, examine how differences in the industrial relations climate across Indian states affects manufacturing performance. However, in my case, I have disaggregated information on both the contracting behaviour and performance of small firms in India.

This research leaves an important question open. Indeed, we would like to know more about what determines the speed of the judiciary. In particular, we would like to identify specific policy measures which would enhance judicial efficiency. This is a problem both for India and for large number of other countries which would suffer from slow courts (Djankov et al, 2003). A key implication emerging from chapter 2 is that the quality of the judiciary has an effect on economic activity. Finding specific means of speeding up courts is therefore crucial.

In Chapter 3, I study the Code of Civil Procedure of India to explain why the judiciary is so congested in India. I focus in particular on the state amendments to this code and on conflicting decisions taken by High Courts because of its ambiguity between 1971

and 1996. I find that amendments which add procedures to be completed by the court significantly delay the treatment of cases. Similarly, I find that conflicting judicial decisions taken in the past increase the duration of a trial as judges must spend considerable time in choosing between several conflicting views. I then use these state amendments and conflicting decisions as instrumental variables for the expected duration of a trial in order to measure the impact of slow judiciaries on economic performance.

It is today well recognized that the judiciary is likely to have a significant impact on economic activity. It is clearly understood today from the contributions by North (1990) that institutions defined as the organization of society, "rules of the game" are a major determinant of economic performance. "Property rights" institutions protect citizens from various forms of expropriation by elites and "contracting institutions" determine the terms and ease of contracting between citizens. A number of recent papers suggest that institutions may exert a fundamental impact on the contracting behavior of firms and hence on aggregate economic performance. Knack and Keefer (1995) relate some professional country risk measures provided by business experts to their measure of the quality of the judiciary which is the amount of contract-intensive money (the difference between M2 and cash). The intuition for this measure is that in a country with a better judiciary, we should see more complicated contracts involving that type of money. Acemoglu et al (2001) use differences in the mortality rates faced by European colonialists to estimate the effect of institutions on economic performance. They argue that Europeans could not settle and were more likely to set up extractive institutions in places where they faced higher mortality rates. These institutions persisted to the present. They then find that the risk of expropriation, instrumented by settler's mortality, negatively affects economic growth today in a cross section of countries. More recently, Djankov et al (2003) gathered a remarkably detailed dataset on courts performance and procedural formalism in a cross section of 109 countries to show that a higher procedural formalism coming from the legal origin is associated with a less efficient judiciary.

The innovative feature of theses studies is to try to understand the causes of the

variation in the quality of the institutions across countries. This is not only crucial to understand what drives the evolution of institutions, but also econometrically useful in order to interpret causally the impact of institutions on any economic outcome. Indeed, the quality of institutions is largely endogenous to the economic performance of a country. However, these studies do not explain why we should see any variation in the quality of the judiciary inside a country. They also do not provide any guidelines for institutional reform. In contrast, I focus in this paper on a particular explanation for the slowness of the Courts in India: the Code of Civil Procedure.

Chapter 3 studies the role of the Code of Civil Procedure in explaining the judiciary's performance in Indian states between 1971 and 1996. This code is often cited by legal experts to explain India's poor judiciary performance over this period. The charge is that excessive procedural complexity and ambiguity in an antiquated text would delay the courts. Under Section 122 of the Code of Civil Procedure, the High Courts have power to amend, by rules, the procedure laid down in the code. In exercise of these powers, 430 amendments have been enacted by the different High Courts after 1968. I read the text of each amendment and classified each as likely to increase the speed of the judiciary or not. Another reading of the amendments consists in determining if the amendments increase procedural complexity for the courts, and therefore the expected duration of a trial in High Court. I also studied the 144th report of the Law Commission of India edited in 1992 on "Conflicting judicial decisions pertaining to the Code of Civil Procedure, 1908", written by ex-chief justice of India K.N.Singh. This document lists 30 sections of the Code of Civil Procedure that are so vague that High Courts interpreted the text in opposite directions and violated each other's precedents. I concentrate on the extreme instances where the same High Court reached a decision and, later on, its exact opposite. As judges must spend considerable time in choosing between several conflicting views, the violation of a precedent established by the same High Court at a certain time in a certain state could affect the expected duration of a trial in High Court. These two reasons help us understand why the judiciary is slow in India, why there is variation in

the speed of the judiciary across states, how the judiciary affects economic outcomes and what kind of reforms are needed.

The ability to enforce a contract is critical for businesses in order to engage with new borrowers or customers but access to finance is also important for the success of entrepreneurs. I have seen that in most countries, banks will not extend credit without assurances that borrowers are creditworthy and that it is possible to recover the debt if there is a default. Poor people have no credit history and do not possess collateral: shallow financial markets due to information asymmetries limit the growth of poor people's businesses. To study how an improvement in the investment climate can benefit the poor, I will focus on one type of credit institution that expands access to credit for the poor: microfinance.

In 2002, the Grameen Bank, the first microfinance institution, lent $380 million in 3.82 million loans with a repayment rate of 95%, in 35,000 villages and with a staff of 14,000 people. Grameen has been replicated worldwide and has inspired 7,000 microfinance institutions in Latin America, Africa, Asia with 25 million poor clients. Microfinance's main feature is the attribution of small loans to poor people without any collateral. All other development programmes are based on unequal relationships between actors: both funds and knowledge come from the North. Active funders confront passive beneficiaries. The main problem with this model is that with each operation, funds for aid decrease. Microfinance adds a new dimension: the microborrower becomes an active customer, making decisions about organisation, purchase, sales, and investments. With each credit operation, funds for aid actually increase. Microfinance employs private enterprise, can be profitable and gets money straight to the poor.

Microfinance has often been described as a win-win program. But the empirical evidence on the nbenefits it brings to its customers is not very clear. In Chapter 4, I perform an evaluation of microfinance, focusing on the Grameen Bank in Bangladesh. I evaluate the benefits brought to its customers using the technique of matching. Statistical matching adjusts for differences in pre-treatment characteristics between treatment and

non-treatment groups by pairing to each treated individual a non-treated unit with the "same" observable characteristics. Under the assumption that all relevant differences between the two groups are captured by their observable characteristics, the average outcome experienced by the matched pool of non-treated identifies the counterfactual outcome the treated units would have experienced, had they not been treated. The technique of matching takes into account issues of self-selection and non-random program placement.

The main contribution of my thesis is the microeconomic study of the relationship between investment climate and poverty. Instead of using macroeconomic cross-country regressions and relying on a one-to-one relationship between incomes of the poor and average incomes, I use rich microeconomic datasets to asses directly the impact of two institutional features, enforcement of contracts and access to finance, on the lives of the poor and to learn the exact mechanisms through which the investment climate affects the poor.

1.4 Results and Contribution

The primary contribution of this thesis is the careful evaluation of two institutions that have an impact on the economic activity of poor informal microentrepreneurs: the judiciary, because poor entrepreneurs with limited extralegal bargaining power are adversely affected by an inefficient judiciary and the financial institution, because poor entrepreneurs often lack access to finance.

Chapter 2 shows that the quality of judicial institutions also matter both for the contracting behaviour and economic performance of small firms, and can actually be a prerequisite for access to finance. My findings are in line with an emerging, largely macroeconomic literature which suggests that institutions matter for economic performance (for example, Djankov et al (2002), Acemoglu et al (2001), Rodrik et al (2002)). My firm-level data is somewhat unique in the sense that it contains a great deal of in-

formation on non-recovery of service charges/fees/credit, design of contracts, whether a firm is capital constrained, source of borrowing and the form of ownership. This type of information is typically not available in most firm-level databases.

When I relate these specific measures to the state pendency rate, I find that having a slower judiciary is associated with more breaches of contract, less relationship-specific investments, a greater shortage of capital, less access to formal financial institutions and a preference for family ownership of firms. These results indicate that the quality of the judiciary across Indian states plays an important role in shaping economic activity in this important sector of the economy. Moreover, I find that having slower courts in an Indian state is negatively associated with firm performance. My results are consistent with a simple game theoretic model which illustrates how having a slower judiciary will affect the behaviour of agents in a contracting relationship. The key insights from the theory are that firm owners in slow judiciary environments are more likely to break contracts, less likely to engage in relationship-specific investment, more likely to be credit constrained, less likely to have access to formal credit and more likely to keep the firm under family ownership. This leaves the question open of what exactly drives the slowness of the courts

In Chapter 3, I find that amendments to the Code of Civil Procedure such as the ones adding or complexifying procedures for the Court affect the expected duration of a trial in High Court. Similarly, the ambiguity of the Code of Civil Procedure, measured by the violation of precedents established by the same High Court, affects the expected duration of a trial in High Court. This is because judges must spend a considerable time choosing between several conflicting views after the occurrence of such events. Finally, I relate the expected duration of a trial in High Court to economic outcomes. As the quality of institutions is endogenously related to economic performance, I cannot run a simple OLS regression. I use these "Court red tape" amendments and "violation of a precedent established by the same High Court" as instruments for the expected duration of a case in Trial. They represent a spatial and temporal source of variation in the duration

of trials. As such, they could be used as instruments. I do not claim that these two variables are exogenous. Indeed, enacting amendments to the Code of Civil Procedure is responsive to the economic, political, judiciary's conditions of the time. To alleviate this concern, I use amendments less responsive to the judiciary's condition (amendments not purposefully designed to reduce delays in Courts such as these "Court red tape" amendments as opposed to "explicit speed" amendments, which explicitly mention the purpose of favoring expeditious justice), I perform a panel-data analysis capturing any time invariant differences across states in policies and outcomes and I try to control for factors that could have influenced the enactment of these amendments by Courts and I use "violation of a precedent established by the same High Court" whose temporal variation only comes from the occurrence of cases pertaining to ambiguous sections of the Code of Civil Procedure

With this instrumental variable approach, I find that the judiciary is shaping economic outcomes of Indian states. I find that farmers have less access to credit markets. As a result, agricultural development is impeded. I also find that contract-intensive sectors of the economy, such as registered manufacturing and trade, are adversely affected by weak judiciaries. The judiciary has an impact on the weaker sections of the country, such as the poor and farmers. The policy implications of this paper are thus very clear. To reduce the expected duration of a trial in High Court, the number and complexity of procedures that have to be followed by the courts should be reduced. Alternatively, the ambiguity of the Code of Civil Procedure should be reduced by simplifying and clarifying ambiguous and redundant rules. For example, the recommendations of Ex-Chief Justice of India K.N.Singh in the 144th Law Commission report on "Conflicting Judicial Decisions Pertaining to the Code of Civil Procedure, 1908" should be followed. They have not yet been incorporated in the Code of Civil Procedure. By clarifying each ambiguous rule, this will allow judges to save time by not having to consider several conflicting views.

Chapter 4 explores a potential improvement in access to finance for the poor: Micro-

finance. By comparing participants to matched individuals in non-treated villages, I find that microfinance has a positive impact on the expenditure, the supply of labour, and the girl and boy school enrolment of participants. Participants spend in average 3% more than non-participants. I also find that participants did not experience a gain compared to non-participants in treatment villages. This seems to indicate the presence of positive externalities.

Taken together the main contribution of this thesis is to better understand how the investment climate affects the lives of the poor. I have seen that two main institutions are crucial for the operation of businesses of poor informal entrepreneurs. Slow courts impede operations of entrepreneurs because they experience more breaches of contract, undertake less relationship-specific investments, have less access to finance and favour inefficient dynasties. However, the backlog in the judiciary and confidence in the system could be improved by modifying the Code of Civil Procedure to decrease or simplify procedures and remove the ambiguities in the text by following the recommandations of the 144th Report. Access to finance is limited and development programs such as microfinance benefit the poor.

Chapter 2

Does the Quality of the Judiciary Shape Economic Activity? Evidence from India.

2.1 Introduction

It is clearly understood today from the contributions by North (1990) that institutions defined as the organization of society are a major determinant of economic performance. The literature, however, does not provide much evidence on how the judiciary affects firms' behavior. Theoretically, it has been shown that agents could use repeated games and reputational threats to induce cooperation. Moreover, a formal institution such as the judiciary should not affect informal firms. Empirically, literature on the links between institutions, contract enforcement and economic performance has been largely macroeconomic. In contrast, I try to move this literature in a more microeconomic direction. I focus on one specific measure of institutional quality, the speed of the judiciary, evaluated in an objective fashion. I then examine how this measure affects contracting behaviour and economic performance in a large representative sample of small informal non-agricultural firms in India. This dataset is unique in the sense that an array of ques-

tions were asked to firm owners concerning breaches of contract, the nature of contracts signed, access to credit and corporate ownership. This type of information is typically not available in firm-level datasets. Also, by working within a single country, I am able to control for a range of factors and influences that cannot be as convincingly controlled for in cross country data.

The speed of the judiciary has been identified as a key problem in India. Data on cases pending in courts indicate that there were 3.1 million cases pending in 21 High Courts and 20 million in subordinate courts in 2000[1]. Extreme examples of judicial slowness refer to cases taking 47 years to be resolved, by which time the plaintiff had died. Slow judiciaries could shape the contracting behavior of firms. First, the probability of harsh punishment in monetary or non-monetary terms heavily dissuades opportunistic agents to default ex-post on previous agreements. Slower judiciaries make the discounted value of punishment lower, thereby weakening incentives to cooperate. Occurences of breach of contract should increase. Second, if a firm wants to undertake a relationship-specific investment in order to supply another with a particular asset, the possibility of post-contractual opportunistic behavior by the partner arises once the investment costs are sunk. A speedy judicial system could limit post-contractual opportunistic behavior and foster investment. Third, slow judicial enforcement increases the opportunistic behavior of borrowers: anticipating that creditors will not be able to recover their loans quickly via courts, borrowers will be more tempted to default. Creditors respond to this strategic behavior of borrowers by reducing the availability of credit. Fourth, in the event of a firm transfer and if enforcing a financial agreement with a talented manager takes time, firm owners might prefer to transfer control to family members.

To empirically assess the relative importance of these four mechanisms, I relate the speed of the judiciary, measured by the pendency percentage[2], to extensive information

[1] Law's Delays: Arrears in Courts, 85th Report, Department-related parliamentary standing committee on Home affairs, Parliament of India, Rajya Sabha. http://rajyasabha.nic.in/book2/reports/home_aff/85threport%20.htm

[2] defined as the ratio of cases pending at the end of the period to the sum of cases pending at the

about the contracting behaviour of a representative sample of 170,000 small informal non-agricultural firms in India in 2000. This dataset is unique in the sense that an array of questions were asked to firm owners concerning breaches of contract, relationship-specific investment decisions[3], access to credit and family ownership. This type of information is typically not available in firm-level datasets and allows me to test the four likely mechanisms through which the judiciary affects economic performance of small informal firms. I find that slower judiciaries are associated with more breaches of contract, less relationship-specific investments, a greater shortage of capital, less access to formal financial institutions and a preference for family ownership of firms. One has to be cautious when interpreting such results. Although issues of reverse causality do not seem pregnant here[4], unobserved state heterogeneity could be a problem. To alleviate this concern, I control incrementally for firm-level variables and state-level variables and find the coefficient of interest to be stable. Additionally, I interact the speed of the judiciary with a firm-level indicator of demand for justice to show that firms depending more heavily on the judiciary are more hurt by slow courts.

A number of recent papers suggest that institutions may exert a fundamental impact on firms' contracting behaviour and hence on aggregate economic performance (Knack and Keefer, 1995; Mauro, 1995; Hall and Jones, 1999; Acemoglu et al, 2001). To open the black box of "institutions", I focus in this paper on the judiciary, in particular its speed, which has been identified in India as one of its key problem. Djankov et al. (2003) have made an important contribution to the study of courts. They measure judicial formalism in 109 countries around the world. They find that judicial formalism is greater in civil law than in common law countries and greater formalism is associated with less

beginning of the period and cases filed during the period

[3]The specificity of an investment can be precisely estimated in the sample with questions such as: was the design of the product specified entirely by the contractor? Was the equipment provided by the master unit? Were the raw materials provided by the master unit? I later define a contract as a relationship-specific investment contract in cases where these three questions were answered affirmatively.

[4]as the contracting behaviour of a small informal firm is unlikely to affect the speed of the judiciary

consistency, less honesty, and less fairness in judicial decisions. Endogeneity concerns are addressed by using legal origin as an instrument for judicial formalism. This paper differs in two ways. First, in contrast to Djankov et al. (2003), this paper uses a within-country analysis of India. By working within a single country, I am able to control for a range of factors and influences that cannot be as convincingly controlled for in cross country data. This allows one to identify the effect of judicial efficiency separately from that of laws, legal origin, and other country-wide characteristics. Second, the focus in my paper is on economic, not only judicial, outcomes.

The structure of this chapter is as follows. section 2.2 explores the channels through which the quality of the judiciary impacts on firms' economic performance. I consider four prominent aspects in the life of a firm: breaches of contract, use of relationship-specific investments, access to credit markets and corporate ownership. Section 2.3 provides a background on the functioning of the judiciary in India and on the 55th round of the National Sample Survey of India on non-agricultural informal enterprises. section 2.4 presents my method, and results pertaining to the contracting behaviour of firms. Section 2.6 concludes.

2.2 Theory

2.2.1 Breaches of Contract

Many exchanges occur instantly and simultaneously. In this type of exchange, there is little reason for promises and enforcement means. Promises are made in the case of deferred exchanges. The enforceability of promises encourages exchange and cooperation among people. For example, the judiciary is an important deterrent to any fraud that might be more economically attractive in the short run. The probability of harsh punishment in monetary or non-monetary terms heavily dissuades opportunistic agents to default ex-post on previous agreements. Slower judiciaries make the discounted value of

punishment lower, thereby weakening incentives to cooperate.

This situation can be modelled as an agency game. The first player, the principal, decides to put a valuable asset under the control of a second player, the agent. The agent decides whether to cooperate (produce, give back the valuable asset and share the trade surplus) or appropriate (keep the valuable asset). Cooperation is productive whereas appropriation is redistributive. In the absence of any contract enforcement, The agent's best move is to appropriate. Consequently, the principal's best move is to not enter this game. No activity is undertaken in the absence of enforcement means.

If a contract is signed between the two parties and is enforceable before a court, payoffs are radically modified. If the agent breaches, the principal receives compensatory damages from the agent. If compensatory damages in case of a breach are such that it is the agent's best move to cooperate, then the principal's best move is to invest. The purpose of enforcement is to enable people to cooperate by converting games with non cooperative solutions into games with cooperative solutions. It is interesting to note that the prospect of a distant fine because of a slow judiciary reduces the incentive to cooperate.

However, the judiciary is not the only mean to enforce contracts. The fear of harm to reputation can serve to induce parties to adhere to contracts (Bernstein, 1992; Greif, 1993, Klein et al, 1981). A repeated agency game is used to model this situation. A grim-trigger strategy played by the principal induces the agent to cooperate. An enduring relationship does not necessarily require an effective legal system.

This is true in the case of enduring relationships with an infinite horizon. However, most business relationships are open-ended. Open-ended relationships have no predetermined end. They can persist indefinitely or end unexpectedly. Open-ended relationships dissolve and reform easily as circumstances change. Assume there is an indefinite amount of players, who form into pairs to play each round of the previous agency game. At the end of each round, relationships continue in the next round or dissolve due to two rea-

sons: unforeseeable changes or appropriation by the agent. When a relationship dissolves, players must search for another partner. This might be costly.

Agents can follow two strategies. First, they can cooperate until the relationship is dissolved by an unforeseeable event, therefore getting low and steady payoffs. Second, they can appropriate and search for another partner, therefore deriving high but irregular payoffs. In a competitive equilibrium, both strategies must earn the same payoff. Another condition for a competitive equilibrium is that principals looking for a partner must be willing to invest, knowing that he will be matched with a certain probability with appropriating agents or with cooperating agents, whose relationship has just been dissolved due to unforeseeable changes. Such an equilibrium exists under reasonable assumptions (Cooter et al, 2003).

The power of principals to exit from agency relationships makes some cooperation possible even in open-ended games. However, a speedy judiciary may increase the amount of cooperation. The low discounted value of a remote punishment given by slow courts does not act as a deterrent to appropriation. In contrast, by swiftly punishing breachers, a speedy judiciary raises the agent's payoff of cooperation. It is interesting to note that as cooperation, as opposed to appropriation, is productive , economic production rises. This simple model predicts that a speedier judiciary is associated with less breaches of contract and higher economic output. In the dataset, the question "did you experience a problem of non-recovery of service charges/ fees/ credit?" was asked to firms. I can therefore test this theoretical implication.

2.2.2 Relationship-Specific Investment

The previous section demonstrated that more contracts are breached when judiciaries are of low quality. But one could also expect the quality of judiciaries to impact on relationship-specific investments undertaken by the firm. I consider the case where a firm would undertake a relationship-specific investment in order to supply another with

a particular asset. However, as Klein et al (1978) emphasized, the possibility of post-contractual opportunistic behavior arises. Indeed, to induce the supplier to undertake an investment, a firm can either write a long-term contract with favorable terms for the supplier or guarantee exclusivity rights. But once the costs of the investment are sunk, there is an immediate incentive for the firm to renege on the contract and capture the suppliers' rents. Alternatively, if search costs to find a new supplier are high, there is an immediate incentive for the supplier to use its monopoly power to impose higher prices. These frictions could reduce the incentive to invest; Klein et al (1978) conclude that vertical integration will supersede market systems in such cases. But another way to limit post-contractual opportunistic behavior is a speedy judicial system that enforces contracts swiftly.

It is very hard in practice to estimate what a relationship-specific investment is. A contribution of this chapter is to exploit the richness of the data about the type of contracts signed. The specificity of an investment can be precisely estimated in the sample with questions such as: was the design of the product specified entirely by the contractor? Was the equipment provided by the master unit? Were the raw materials provided by the master unit? I later define a contract as a relationship-specific investment contract in cases where these three questions were answered affirmatively. This allows me to test the theoreticla implication stating that a speedy judiciary should be associated with more relationship-specific investments

2.2.3 Access to credit markets

We may also believe that judicial systems impact on firms' debt contracts. As Pagano et al (2002) explain:

> "The key function of courts in credit relationships is to force solvent borrowers to repay when they fail to do so spontaneously. By the same token, poor judicial enforcement increases the opportunistic behavior of borrowers:

anticipating that creditors will not be able to recover their loans easily and cheaply via courts, borrowers will be more tempted to default. Creditors respond to this strategic behavior of borrowers by reducing the availability of credit."

A direct implication of this statement is that a faster judiciary, by imposing a higher discounted value of fines paid by the borrower, will foster credit supply. A corrolary of this statement concerns alternative financing means. The model of repeated game agency predicts that individuals will seek long-run relationships in the absence of adequate state protection. Long-run relationships require commitment. Traditional forms of commitment include friendship, kinship. Indeed, some firms get loans from relatives or business partners. The advantage of such creditors over formal financial institutions is that they can better monitor the actions of borrowers, reduce the information asymetry between the two parties. On the other hand, interest rates can be prohibitive. The model predicts that as the courts get faster, borrowers will turn away from personal relationships towards formal financial institutions, which will be more confident in offering credit. The data contains information on the exact source of the loan (central and state level term lending institutions; government (central, state, local bodies); public sector banks and other commercial banks; co-operative banks and societies; other institutional agencies; money lenders; business partner(s); suppliers/contractors; friends and relatives) as well as its amount. I am therefore able to test the theoretical implication about access to credit markets.

2.2.4 Dynastic Management

Dynastic management is the inter-generational transmission of control over assets that is typical of family-owned firms. The most comprehensive data on corporate ownership around the world has been collected by La Porta, De-Silanes and Shleifer (1999), who look at the control structure of the 20 largest publicly traded companies in 27 (mostly

wealthy) economies in 1995. On average across these countries, family ownership is the control structure of 30% of companies. The numbers for the middle-income countries in the sample are especially striking: 65% in Argentina, 50% in Greece, 100% in Mexico, 45% in Portugal. They argue that widely held corporations should be more common in countries with good legal protection of minority shareholders. In these countries, controlling shareholders have less fear of being expropriated themselves in the event that they ever lose control through a takeover or a market accumulation of shares by a raider, and so might be willing to cut their ownership of voting rights by selling shares to raise funds or to diversify.

However, the firms I study here are very small firms with less than ten employees and are certainly not floated on stock markets. Another explanation that might be more adapted to the type of firms I consider in this chapter comes from Caselli, Gennaioli (2002). Their reasoning proceeds in two steps. First, the heir to the family firm has no obvious talent for managerial decision making: dynastic management is a potential source of inefficiency. Second, the owner of the firms; realising that his heir is untalented, would like to transfer control to new talented owners or hire talented managers. However, imperfect financial-contract enforcement discourages ownership changes for the same reason I developed in the access to credit markets section of this chapter. The imperfect judicial systems in developing countries could be the cause of the prevalence of family-owned firms and therefore of the poor economic performance of those countries. I know, in the case of partnership, whether the firms are family firms (partnership with members of the same household) or not (partnership between members not all from the same household). I am therefore able to test if family partnership are more prevalent in states with a slower judiciary..

To conclude the theoretical component of this chapter, I expect in states with a higher pendency rate more breaches of contract, less relationship-specific investments, more difficulty accessing credit market, and more family firms. These predictions are

testable using the dataset I analyse in the following sections.

2.3 Background

The purpose of the chapter is to relate the quality of the judiciary to the contracting behaviour of firms. To do this, I make use of a state-level dataset of the courts. The judicial institutions are the same across courts and states. The Indian judiciary operates at three levels: a unique Supreme Court at the federal level; High Courts in each state; and, at lower levels, district judges for civil cases and sessions judges for criminal cases. India operates under a common law system which implies that the actions of High Court judges set precedents for the functioning of subordinate courts in that Indian state.

Data on cases pending in courts indicate that there are 3.1 million cases pending in 21 High Courts and 20 million in subordinate courts in 2000.[5] Some examples of the slowness of the judiciary are striking:

> "the highest court in the country, the Supreme Court, took 11 years to acquit the headmaster of a school on the charge of taking a bribe for signing the salary arrears bill of his school. In another case of judicial delay, the victim was former Union Law Minister, Dr. B.R.Ambedkar. The judgement came in his lifetime but it took 47 years for the Maharashtra government to execute the decree passed in his favour against illegal encroachment of his land by Pakistani refugees. By then he was dead".[6]

One of the reasons for judicial delays is the shortage of judges. As Videh Upadhyay, a lawyer in the Supreme Court of India, states,

[5] Law's Delays: Arrears in Courts, 85th Report, Department-related parliamentary standing committee on Home affairs Parliament of India, Rajya Sabha. http://rajyasabha.nic.in/book2/reports/home_aff/85threport%20.htm

[6] Krishnamoorty, Dasu, *Judicial Delays*, Indolink, editorial analysis, 2003

"the imperative for clearing the burgeoning judicial backlog, and hence for more judges and Courts, needs to be fully understood. Any lawyer practising in the Delhi High Court - undoubtedly one of the most important High Courts of the country - can testify that, on an average 60-70 cases are listed before a Delhi High Court Judge per day. The sheer quantum of cases forces a judge to adjourn most of the matters leading to further backlogs. The inevitable outcome: normal adjournments are for 4-6 months, the trial dates are not available before 2 years and settlement of suit takes place over 15 years."[7]

Another reason is the inadequacy of laws in India. Some provisions in place in India can have a positive impact on the speed of a trial. One of the major positive legal principles is *res judicata*, which means that no claim or suit can be brought to court more than once. Another is the rule governing the transfer of suits forbidding multiple suits in different places on the same issue. This statute helps reduce the backlog of the judiciary. But other provisions in place in India can have a negative impact. For instance, the Code of Civil Procedure states that a litigant does not have to appear in court in person. Each litigant can send a pleader instead. But the pleader cannot accept a brief in lieu of a litigant; hence, pleaders are often sent as a strategy to delay judgments. Another rule is that the plaint has to include the complete claim. However, amendments of the original pleadings are impossible. Therefore, the statements are prolific in language, leaving a wide interpretation of the plaint in the proceedings. This reduces the clarity of the plaint.

Therefore, speed has been identified as the key problem with the judiciary in India dominating all other problems such as fairness, predictability and access to the judiciary. I measure the speed of the judiciary with the pendency percentage, defined as:

$$\text{pendency percentage} = \frac{\text{cases pending}(t)}{\text{cases pending}(t-1)+\text{cases filed}}$$

[7]Upadhyay Videh, "More cases, more judges, more courts", *India Together*, 2003.

I constructed this index for 1999 from the annual report of India's Ministry of Law, Justice and Company Affairs. This is an incomplete measure since the quality of a judiciary can also be measured by the fairness of its decisions. But the measure I employ does have the advantage of being an objective measure of judicial efficiency. The overall pendency (civil and criminal cases) is an interesting statistic since it captures the perceived efficiency of the judicial system and it is the perceived efficiency of the judicial system that will affect the contracting behaviour of firms.

One attractive feature of this Indian data is the variation in pendency percentage across states. This is due to the common law system which compared with the civil law system, is much less codified. This liberty enables the judiciary to interpret the law more flexibly, and to adjust quickly to new developments. In particular, The Code of Civil Procedure, which defines the rules of a trial from the filing of a suit to the execution of a verdict, leaves great discretion to judges to either streamline the process or make it more complex. Due to the common law system, the decisions of High Courts concerning disputes about statutes of the Code of Civil Procedure set precedents for the respective subordinate courts. This is why a High Court's ruling can enhance or impair the efficiency of all courts within its jurisdiction. For example, an order in the Code of Civil Procedure states that the court may "grant an adjournment if sufficient cause is shown". The perception of sufficiency varies significantly among High Courts: the Calcutta High Court decided that the absence of a lawyer is not a cause to adjourn trial, whereas the Allahabad High Court granted a similar request. This example is particularly interesting as it shows that different interpretations of the same law in different states can have an impact on the speed of the judiciary.[8]

It is often claimed that the judicial system has only a limited impact on the economy because people resort to alternative dispute resolution institutions, in particular informal ones. Koehling (2002) describes two types of such informal institutions in India: Pan-

[8]See Koehling (2002) for a more extensive analysis of the Indian judiciary.

chayats and rural planning commissions. Both institutions play a crucial role in settling and avoiding rural disputes. The Panchayats, with their limited judicial authority, are used to settle disputes about land usage, tenure and commons. As locally-bound institutions, they are highly efficient since they are familiar with the situation and the litigants at the village level. Correspondingly, the level of acceptance among the population is high. In the case of dispute resolutions, Panchayats can impose very limited sanctions, but the social pressure created by a judgement serves as a strong incentive to comply with the judgement. Rural planning commissions submit proposals for infrastructure projects such as water dwelling, road improvement to the respective state's authorities. Their involvement ensures broad participation of the affected population, and provides the basis for a distribution of public goods and services according to the needs of the poor. They are the first contact point for administrative complaints, and thus do prevent disputes before the projects are implemented. I therefore collect information on the number of these entities, and use this as a control in my regressions.

My aim in this chapter is to relate these measures of judicial efficiency to firm's contract behaviour. In this regard, I turn to a representative sample of 170,000 small informal firms in India. This dataset is the 55th round of the National Sample Survey in India collected in 1999/2000 for small non-agricultural firms.[9] There are several characteristics of this dataset that make it appropriate for use in identifying the impact of judicial delays on contracting behaviour. First, a detailed list of problems experienced by the firm was collected. Each firm reported if it found that the non-recovery of service charges, fees or credit was a major obstacle to its operation. I interpret this problem as a breach of contract. Second, a detailed questionnaire about the type of contracts used is also available. I know if the firm operated on a contract basis, and if so, the type of contract it used. For example, I know if the equipment and raw materials were self-procured, supplied by the master unit/contractor, or both. I also know if the design was

[9]See Data Appendix for details of variables and an outline of the sampling design.

specified by the contractor. Third, I have information about the access to credit markets. Each firm was asked if it found that the shortage of capital was a major problem to its operation. Related to this, a wealth of information on the source of loans is reported. I know if the loan was granted from a central and state-level term lending institution, a government (central, state, local bodies), public sector banks, commercial banks, other institutional agencies, money lenders, business partners, suppliers/contractors, or friends and relatives. Fourth, we have information on the type of ownership of the firm, whether it is a partnership with members of the same household or not. Finally, a wide range of more conventional information is also available for each firm: the full characteristics of all employees, the firm's capital stock, and factor incomes, the source and destination of the firm's final product, and the sector in which the firm is operating (to the 5-digit level in the National Industry Classification).

2.4 Methods and Results

To relate judicial efficiency to contracting behaviour, I perform regressions of the form:

$$y_{ijs} = \alpha_0 + \beta p_s + \delta_s Z_s + \gamma_{ijs} X_{ijs} + \alpha_j d_j + \varepsilon_{ijs}$$

where i corresponds to the firm, j to the sector studied, and s to the state. The variable y_{ijs} represents the outcome variable of interest; first this will be the firm's contracting behaviour, and later its performance. In this specification, determinants of the outcome include a constant (α_0), the pendency percentage (p_s), a vector of state-level controls (Z_s), a vector of firm-level controls (X_{ijs}) and sector-fixed effects (d_j). The coefficient of interest is therefore β.

My research design begins with a simple examination of the correlation between the contracting behaviour outcomes and the pendency percentage, and then incrementally adds control variables to that regression in order to check the robustness of the result.

The state-level controls (Z_s)[10] consist of the following: state gross domestic product per capita and per capita income growth rate, to control for overall economic development; the state school enrolment and literacy rates, to control for educational attainment; state amount of credit per capita, to control for overall development of the financial sector; state expenditure on the organs of state and the unit cost per policemen, to control for the part of the state budget devoted to the enforcement of law and order; the state length of roads per capita and access to safe drinking water, to control for the quality of infrastructure; and finally, the state death rate and state male life expectancy to control for health sector development.

The firm-level variables (X_{ijs})[11] consist of the following: indebtedness, to control for the disciplinary effect that an increase in indebtedness has on the use of available funds; level of interest payments as a proportion of firms' profits, to control for the likelihood of bankruptcy; amount of capital accruing from financial institutions, to control for the firm's ability to gain access to sources of financing; proportion of temporary to total employment in the firm, to control for for labour productivity[12]; gender of the owner, to control for any gender-specific effects on firm performance[13]; number of unrelated other activities undertaken by the owner, to control for time spent on the firm's activities; and finally, whether or not the firm is registered, to control for the level of informality of the business.

I also include sector dummies (d_j) to control for sector-specific effects. I use simple probit regressions when the outcome is a dummy variable. I do not expect much

[10] See Data Appendix for sources of the variables.

[11] See Data Appendix for sources of the variables.

[12] The expected effect of this variable on productivity is ambiguous. It is possible that the incentives for the firm to earmark resources to investment in human capital are greater in the case of a full-time working relationship. Alternatively, temporary labour might provide a firm with increased flexibility to adapt to changes in its environment. Furthermore, it could be argued that temporary workers have an incentive to make a greater effort with the aim of becoming permanent.

[13] The impact of female ownership on firm performance is ambiguous. Many studies indicate that businesses owned by women underperform those of men. One of the difficulties faced by women in operating their own small business is family responsibilities which limit the hours they are able to spend working in their small businesses.

endogeneity because there is no reverse causality between a small firm of less than ten employees[14] and the quality of the judiciary. I use robust standard errors and a clustered sampling strategy at the level of the state because I include state-level variables in a micro-econometric survey (Moulton, 1990).

2.4.1 Basic Results

Table 2.1 examines the relationship between contracting behaviour and the quality of the judiciary. The dependent variable is the occurrence of breach of contract and the sole determinant is the pendency percentage. The dependent variable was obtained from a list of problems commonly experienced by the firms. One such problem is defined as: 'non-recovery of service charges/ fees/ credit'. This relates to cases where there has been a breach of contract. I therefore construct a dummy variable equal to 1 if the firm experienced this type of problem as one of its main problems, and 0 if not. I calculate in column (1) a simple correlation between these two variables. I incrementally add state-level control variables in column (2), firm-level control variables in column (3) and sector dummy variables in column (4). The results are all statistically significant which strengthens the claim that there is a significant relationship between the pendency rate and the contracting behaviour of firms. This result is consistent with proposition 1. Column (4) of Table 2.1 indicates that if the pendency percentage increases by one percentage point, then the probability that the firm will experience a breach of contract will increase by 0.1 percent. This result is quite weak and although statistically significant seems economically insignificant. However, the ranges of pendency percentages in India must be borne in mind. In 1999, the pendency percentage varied across states between 45% and 90%. The following interpretation of the coefficient β can therefore be devised. Based on the coefficients of the regression and using the standard cumulative normal function, which is the definition of the probit function, the probability that an

[14] 55% of the firms in the dataset used in this paper have one worker.

average firm in the average state will experience a breach of contract, where the pendency percentage is 45%, can be estimated. I estimated the same quantity for the average firm in the average state with a pendency percentage of 90%. The difference between these two probabilities is 5 percentage points. The results can be interpreted in the following way: the probability that the average firm in the average state will experience a breach of contract is 5 percentage points higher if the pendency percentage varies from the lowest rate to the highest rate in India.

Table 2.2 looks at the nature of contracts as a function of the quality of the judiciary. The dependent variable represents whether or not a firm is operating on a contractual basis and the explanatory variable is the pendency percentage. As discussed earlier, the dataset contains detailed information about the contractual environment under which these firms are operating. I therefore constructed a dummy variable equal to 1 if the firm was working on a contract basis and 0 if not. Column (1) of Table 2.2 does not indicate any relationship between the quality of the judiciary and that variable. This may be due to the fact that only 7 percent of the firms in the dataset operate on a contractual basis. However, instead of evaluating the impact that the judiciary has on the number of contracts entered into, it is more instructive to assess the impact that the judiciary has on contract design. The dataset contains additional information on the nature of these contracts. In particular, three questions were asked to the firms: was the design of the product specified entirely by the contractor, was the equipment provided by the master unit, and were the raw materials provided by the master unit. I define the contract as a relationship-specific investment contract if these three questions were answered in the affirmative. Indeed, the definition of a relationship-specific investment is an investment of capital that could not be used in another activity, or if so used would result in a great loss of value. In columns (2) to (5) of Table 2.2, I keep only the firms working on a contract basis, amongst which some signed a relationship-specific investment contract. By reducing the size of the sample, I hope to be able to pinpoint a significant

relationship between the quality of the judiciary and the likelihood to sign a relationship-specific investment contract. I incrementally add control variables from column (2) to column (5). Column (5) illustrates that fewer relationship-specific investment contracts are signed in states with higher pendency rates. This provides support for proposition 2. An economic interpretation of this result is that the average firm in the average state is 4 percentage points less likely to undertake a relationship-specific investment if the judiciary is the slowest of India as opposed to the fastest.

Table 2.3 examines the influence of the judiciary on firm's access to credit markets. The dependent variable is information on loans and the explanatory variable of interest is the pendency percentage. The dependent variable used in the regression of column(1) is a dummy variable equal to 1 if the firm experienced a shortage of capital as one of its problems, and 0 otherwise. A higher pendency means more problems of that type. This result can be interpreted in the following way: the probability that the average firm in the average state will experience a shortage of capital increases by 7 percentage points if the judiciary is the slowest as opposed to the fastest. In column (2), the dependent variable represents whether or not the firm had an outstanding loan at the time of the survey. I find that fewer firms have outstanding loans where the rate of pendency is higher. The average firm in the average state will find it 3.5 percentage points harder to get a loan with the slowest judiciary in India, relative to the fastest. An interesting test is to refine the analysis to factor in the exact source of the loan. Column (3) demonstrates that it is 2 percentage point harder to obtain a loan from formal financial institutions in states with a slow judiciary. As predicted, column (4) shows that it is harder to secure a loan from strangers (suppliers, contractors, moneylenders) although the statistical significance of this result is not very high. Turning to loans from friends, relatives and business partners (column (5)), there are very few firms in this category so I restrict attention to the sample of firms that obtained a loan. Among this subset of firms, column (5) demonstrates that loans are more likely to come form friends, relatives,

and business partners when the judiciary is slow. This agrees with the notion that people tend to operate in small business networks in areas where the pendency rate is higher. The average firm to have obtained a loan will be 16 percentage points more likely to have obtained it from a relative than from other sources if the judiciary is the slowest in India as opposed to the quickest. This result is consistent with Proposition 3, which holds that agents should obtain more loans from friends and less from banks in situations where there is a slow judiciary.

Table 2.4 looks at the nature of the ownership of the firm as a function of the quality of the judiciary. I restrict the sample to firms engaged in partnerships as opposed to single-ownership firms, as the partnerships firms have further data on the relationships between partners. There are two possible types of partnership: partnership with members of the same household and partnership between members not all from the same household. Dynastic management corresponds to the first category of partnership. Control variables are added incrementally in the four columns. Column (4) illustrates that there are more partnerships with members of the same household in states with a slow judiciary. The average firm engaged in a partnership in the average state is 9 percentage points more likely to be a family firm if the judiciary is the slowest of India as compared to the fastest. This is consistent with Proposition 4 which says that family firms should be more prevalent in states with a slower judiciary.

These basic results can be refined using the methodology of Rajan and Zingales (1998). The intuition is that a good judicial system should disproportionately help firms typically dependent on the judicial system for their growth. I will construct the test as follows. A sector's need for the judicial system is identified from data on U.S. firms. The need for the judicial system will be measured by the vertical integration of the firms. Indeed, a highly vertically integrated firm does not rely on the judicial system since all activities are internalized. On the contrary, a non vertically integrated firm relies on many suppliers or customers and therefore is more dependent on the judicial system.

The vertical integration of the firms will be measured by the ratio of the value added generated in the firm to the total sales. If that indicator is 1, then it means that all the creation of value comes from within the firm. If that indicator is 0, it means that a firm is not highly vertically concentrated. Following Rajan and Zingales (1998), I make two very important assumptions. First, it is considered that the judicial system is optimal in the United States. This method allows us to identify a sector's technological demand for a judicial system. Second, it is assumed that such a technological demand carries over to other countries. I then examine whether industries that are more dependent on the judicial system experience more problems of breach of contract, undertake fewer relationship-specific investments, suffer from shortages of capital or are more likely to be family firms.

Data for vertical integration in the US was gathered from the Industrial Statistics Database 2003 at the 3- and 4-digit level of ISIC Code (Revision 3) put together by the United Nations Statistical Division.[15] I then construct the interaction between the demand for justice (defined as 1 minus the vertical integration) at the NIC2 level and the pendency percentage.

Table 2.5 column (1) and (2) show no significant impact. In Table 2.5 column (3), the dependent variable is the occurrence of a shortage of capital. It can be seen that a firm operating in a sector which is dependent on the judicial system in the USA suffers more from a slow judiciary than a firm operating in a sector not dependent on the judiciary. In column (4), the dependent variable is the likelihood of being a family firm. We see that a firm in a sector that would be dependent on the judicial system in the USA is more likely to be a family firm than a firm in a sector not dependent on the judiciary. I tested if my results did not depend on the choice of the benchmark country by gathering the data for Canada. The last four columns of Table 2.5 show that the result is comparable and according to what expected.

[15] I restrict the sample to manufacturing firms following Rajan and Zingales (1998).

This extension provides an additional insight compared to the basic results in the sense that the effect of the judiciary depends on the demand for justice by a firm. Sectors that are typically more dependent on the judiciary would suffer more from a slow judiciary.

2.4.2 Robustness checks

To lend support to the previous set of estimates, I now perform a series of robustness checks.

The first robustness check concerns the efficiency measure of the judicial system. It must be determined whether or not the results obtained are sensitive to the particular measure of the quality of the judiciary used. Table 2.6 looks at the relationship between the occurrence of a breach of contract and the quality of the judiciary using various measures of the quality of the judiciary as an explanatory variable. I used successively in column (1) to (6) the pendency percentage of total cases in High Courts in 1999 (from Annual Report, Ministry of Law, Justice and Company Affairs); the pendency percentage of total cases in High Courts in 1998 (same source); the expected duration of a trial in High Court in 1996 (measured in number of pending cases at the beginning of the period plus number of filed cases within the year divided by the number of cases disposed of within the year from Law commission reports, Annual Reports of the Ministry of Law and Justice); the corresponding pendency rate in 1996 (defined as 1-1/duration); the expected duration of a trial in High Court in 1995; and the corresponding pendency rate in 1995. Columns (1) to (6) of Table 2.6 show that the positive result remains unchanged even while the pendency rate is measured at different times, from different sources or relating to other types of cases.

A potential problem with using the pendency rate as a measure of the quality of the judiciary is the possibility of out of court settlements. Indeed, if contracting parties are aware that they are unlikely to achieve an expeditious verdict, they might be more inclined to resolve disputes by way of settlement. This could artificially reduce the

backlog of cases the judiciary is treating. The pendency rate could be influenced by the settlements and a low pendency rate would not be evidence of an efficient judiciary.

A similar problem might arise if the assumption made in section 2.2.1, about random matching between a seller and a buyer, is relaxed. It could be argued that, faced with a slow judicial system, a seller would seek to acquire information about his partner in order to solve the information asymmetry. This would enable him to deal only with patient agents who would be willing to cooperate, thereby creating a business network, as opposed to the anonymous market where players are matched randomly. Kali (1999) develops a theory of business networks where they are endogenous to the reliability of the legal system. He finds that the existence of networks exerts a negative effect on the functioning of the anonymous market. This is because the networks absorb honest individuals, raising the density of dishonest individuals engaged in anonymous market exchange. If agents could self-select in small groups where information is shared and no default occurs, this would surely reduce the number of breaches of contract in the economy, unclog the judiciary and make it artificially efficient. In that case again, a low pendency rate would not be evidence of an efficient judiciary.

These two points of criticism arise from the fact that the measure of the efficiency of the judiciary used relates to the demand for justice as well as the supply of justice. Indeed, the pendency rate is defined as:

$$\text{pendency percentage} = \frac{\text{pending}(t)}{\text{pending}(t-1)+\text{filed}}$$

Considering the following identity:

$$\text{pending}(t-1)+\text{filed}=\text{pending}(t)+\text{solved}$$

the pendency percentage can be rewritten as:

$$\text{pendency percentage} = \frac{\text{pending}(t-1)+\text{filed-solved}}{\text{pending}(t-1)+\text{filed}}$$

This expression of the pendency percentage includes the quantity of cases filed. The pendency rate depends both on how many cases were resolved (the supply of justice) and the number of new cases brought (the demand for justice). I am interested in the effect of the supply of justice on contracting behaviour of firms, but that effect here is confounded by the demand for justice. In particular, if the number of new cases increases, the pendency rate goes up. An increasing pendency rate would not be evidence of an increasingly inefficient judiciary but would merely reflect the litigious nature of agents.

To solve this particular problem, a measure of the efficiency of the judiciary that focuses more on the supply side of justice can be employed. I considered the following indicator:

$$\frac{\text{solved}}{\text{pending}}$$

This indicator would only reflect the capacity of judges to solve cases. A high ratio would indicate that many pending cases are being treated. Column (7) of Table 2.6 shows that this indicator is positively correlated with breach of contract. Indeed, I find that all results presented in this chapter are robust to the use of this alternative measure of judicial efficiency. This confirms the conclusion that the efficiency of the judiciary in dealing with pending cases affects the contracting behaviour of firms.

In order to explain the similarity of the results, it is necessary to look at the determinants of cases filed and cases pending in India. Column (1) of Table 2.7 demonstrates that the number of cases pending per judge does not depend on the number of cases filed per judge. This result would be characteristic of a judicial system where a judge solves more cases as the number of cases filed increases in order to keep constant the amount of cases pending. This is confirmed in Column (2) of Table 2.7 where the number of cases disposed per judge is positively correlated, by a one-to-one ratio, with the number

of cases filed per judge. The number of cases pending cannot be explained by the number of cases registered. Other operational factors such as scarceness of means are more important in determining the amount of cases pending. An indicator of the scarceness of means is the number of judges that would be required for a well-functioning judiciary in any state. This indicator is positively correlated with the number of cases pending as can be seen in column (3) of Table 2.7. The conclusion that can be drawn from Table 2.7 is that the number of cases pending does not depend on the number of cases filed. Therefore, if less cases are filed due to out of court settlements or due to the creation of business networks, this would not have an impact on the number of cases pending.[16]

Another concern is that the judicial system is inconsequential as firms endeavour to avoid it through using methods of alternative dispute resolution. The impact of alternative dispute resolutions mechanisms may be measured by the number of panchayats per capita and the number of rural planning commissions per capita. Although such numbers do not reflect the quality of the institutions themselves, they do indicate whether the system is working in the respective state or not, as the majority of institutions are not imposed by the government and thus only come into existence if they are supported by the population itself. I have included in the regressions the number of panchayats and the number of rural planning commissions as additional state controls. The variable of interest remains significant.

2.5 Conclusion

This chapter shows that the quality of judicial institutions in Indian states matter both for the contracting behaviour and economic performance of small firms. My findings are in line with an emerging, largely macroeconomic literature which suggests that institutions matter for economic performance (for example, Djankov et al (2002), Acemoglu et al

[16]Note that the pendency percentage collapses to an indicator similar to the last indicator if the number of cases solved is equal to the number of cases filed.

(2001), Rodrik et al (2002)). My firm-level data is somewhat unique in the sense that it contains a great deal of information on non-recovery of service charges/fees/credit, design of contracts, whether a firm is capital constrained, source of borrowing and the form of ownership. This type of information is typically not available in most firm-level databases.

When I relate these specific measures to the state pendency rate, I find that having a slower judiciary is associated with more breaches of contract, less relationship-specific investments, a greater shortage of capital, less access to formal financial institutions and a preference for family ownership of firms. These results indicate that the quality of the judiciary across Indian states plays a role in shaping economic activity in this important sector of the economy. My results are consistent with a simple game theoretic model which illustrates how having a slower judiciary will affect the behaviour of agents in a contracting relationship. The key insights from the theory are that firm owners in slow judiciary environments are more likely to break contracts, less likely to engage in relationship-specific investment, more likely to be credit constrained, less likely to have access to formal credit and more likely to keep the firm under family ownership.

This research leaves important questions open. The first is that we would like to know more about what determines the speed of the judiciary. In particular, we would like to identify specific policy measures which would enhance judicial efficiency. This is a problem both for India and for large number of other countries which would suffer from slow courts (Djankov et al, 2003). A key implication emerging from this chapter is that the quality of the judiciary has an effect on economic activity. Finding specific means of speeding up courts is therefore an important area for future work. In India, the fact that there is a common law system in place would suggest that the actions of High Court judges may be an important determinant of the speed of the judiciary. Linking the rulings of these judges to court functioning is an area of research that I plan to take up in the future. The second key question that remains open concerns whether

the effects of a slow judiciary vary across sectors of an economy. One can imagine for example that firms in the registered or formal manufacturing sector in India may have fewer contracting problems than the informal firms that I examine in this chapter. In future work, I plan to extend my analysis to firms in other sectors of the Indian economy as a means of testing this hypothesis.

Table 2.1: The impact of pendency on the occurrence of breach of contract

	(1)	(2)	(3)	(4)
Dependent Variable	non-recovery of service charges, fees, credit			
pendency percentage of total	0.1546	0.0948	0.1012	0.1113
cases in High Courts in 1999	(3.03)***	(2.82)***	(3.00)***	(4.28)***
state-level controls	no	yes	yes	yes
firm-level controls	no	no	yes	yes
sector dummies (NIC2)	no	no	no	yes
Observations	176130	176130	172533	172484

• non-recovery of service charges, fees, credit: =1 if the entreprise experienced a major problem of non-recovery of service charges, fees, credit; =0 otherwise.• Probit regressions. Robust z-statistics in parentheses, clustered at the level of the state.• * significant at 10%; ** significant at 5%; *** significant at 1%.• Rather than the coefficients, we report the change in the probability for an infinitesimal change in each independent, continuous variable and, by default, the discrete change in the probability for dummy variables.• Multipliers defined as the inverse of the probability that the observation is included due to the sampling design are used as weights in the regressions.

Table **2.2: The impact of pendency on the probability of working on a contract basis**

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	contract[1]	relationship-specific investment contract[2]			
pendency percentage of total	0.1080	-0.0231	-0.1255	-0.1837	-0.1144
cases in High Courts in 1999	(1.63)	(0.18)	(2.45)**	(3.61)***	(1.89)*
state-level controls	yes	no	yes	yes	yes
firm-level controls	yes	no	no	yes	yes
sector dummies (NIC2)	yes	no	no	no	yes
Observations	166085	12295	12295	12011	11989

• [1] =1 if the entrepise works on a contract basis; =0 otherwise. • [2] =1 if the entreprise undertakes a relationship-specific investment contract; =0 otherwise (restricted to the entreprises working on a contract basis).• a relationship-specific investment contract is defined as a contract where the design is specified by the contractor and when the equipment/raw material is supplied by the master unit/contractor.• Probit regressions. Robust z-statistics in parentheses, clustered at the level of the state.• * significant at 10%; ** significant at 5%; *** significant at 1%.• Rather than the coefficients, we report the change in the probability for an infinitesimal change in each independent, continuous variable and, by default, the discrete change in the probability for dummy variables.• Multipliers defined as the inverse of the probability that the observation is included due to the sampling design are used as weights in the regressions.

Table 2.3: The impact of pendency on shortage of capital

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	shortage of capital[1]	loan[2]	formal loan[3]	business loan[4]	"relative" loan[5]
pendency percentage of total	0.4105	-0.0519	-0.0406	-0.0189	0.3347
cases in High Courts in 1999	(4.53)***	(3.26)***	(4.19)***	(1.03)	(9.12)***
state-level controls	yes	yes	yes	yes	yes
firm-level controls	yes	yes	yes	yes	yes
sector dummies (NIC2)	yes	yes	yes	yes	yes
Observations	172533	176127	175792	175709	15641

• [1]shortage of capital:=1 if the entreprise experienced a major problem of shortage of capital; =0 otherwise. The different sources of loan are: central and state level term lending institutions; government (central, state, local bodies); public sector banks and other commercial banks; co-operative banks and societies; other institutional agencies; money lenders; business partner(s); suppliers/contractors; friends and relatives; others.•[2]loan:=1 if the entreprise got a loan; =0 otherwise.•[3]formal loan: =1 if the entreprise got a loan from lending institutions, government, banks; =0 otherwise.•[4]business loan: =1 if the entreprise got a loan from suppliers/contractors and moneylenders; =0 otherwise.•[5]"relative" loan: =0 if the entreprise got a loan from friends and relatives or the business partner; =0 otherwise (among the entreprises which got a loan; this restriction is imposed because we observed too few loans of that type).• Probit regressions. Robust z-statistics in parentheses, clustered at the level of the state.• * significant at 10%; ** significant at 5%; *** significant at 1%.• Rather than the coefficients, we report the change in the probability for an infinitesimal change in each independent, continuous variable and, by default, the discrete change in the probability for dummy variables.• Multipliers defined as the inverse of the probability that the observation is included due to the sampling design are used as weights in the regressions.

Table 2.4: The impact of pendency on the type of ownership

	(1)	(2)	(3)	(4)
Dependent Variable		dynasty[1]		
pendency percentage of total	0.2937	0.4487	0.3118	0.2937
cases in High Courts in 1999	(1.04)	(2.92)***	(1.97)**	(2.14)**
state-level controls	no	yes	yes	yes
firm-level controls	no	no	yes	yes
sector dummies (NIC2)	no	no	no	yes
Observations	3619	3619	3540	3535

• There are two possible types of partnership: partnership with members of the same household and partnership between members not all from the same household.• [1]dynasty=1 if the type of partnership is the one with members of the same household; =0 otherwise.• Probit regressions. Robust z-statistics in parentheses, clustered at the level of the state.• * significant at 10%; ** significant at 5%; *** significant at 1%.• Rather than the coefficients, we report the change in the probability for an infinitesimal change in each independent, continuous variable and, by default, the discrete change in the probability for dummy variables.• Multipliers defined as the inverse of the probability that the observation is included due to the sampling design are used as weights in the regressions.

Table 2.5: The impact of the interaction between pendency and the demand for justice on the contracting behaviour of the firm

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	demand for justice calculated in the USA				demand for justice calculated in Canada			
Dependent variable	breach[1]	RSI contract[2]	shortage[3]	dynasty[4]	breach[1]	RSI contract[2]	shortage[3]	dynasty[4]
interaction pendency percentage	0.0132	0.2783	0.4549	0.6008	0.172	-0.2006	0.2676	0.5649
in 1999 and demand for justice[5]	(0.07)	(1.12)	(2.38)**	(1.82)*	(1.62)	(1.91)*	(1.74)*	(1.61)
state-level controls	yes	yes	yes	yes	yes	yes	yes	yes
firm-level controls	yes	yes	yes	yes	yes	yes	yes	yes
sector dummies (NIC2)	yes	yes	yes	yes	yes	yes	yes	yes
Observations	50063	8655	50112	936	44490	7944	44506	797

• [1]non-recovery of service charges, fees, credit: =1 if the entreprise experienced a major problem of non-recovery of service charges, fees, credit; =0 otherwise.•[2]=1 if the entreprise undertakes a relationship-specific investment contract; =0 otherwise (restricted to the entreprises working on a contract basis).•[3]shortage of capital:=1 if the entreprise experienced a major problem of shortage of capital; =0 otherwise.• [4]dynasty=1 if the type of partnership is the one with members of the same household; =0 otherwise.•[5]the interaction term is calculated as the product of the pendency percentage in High Courts in 1999 (at the level of the state) and the demand for justice of the firm (at the level of the sector). The demand for justice is calculated for each sector of manufacturing in United States (or in Canada) as one minus the vertical integration of the sector; the vertical integration being measured as the ratio of value added to total sales.• Probit regressions. Robust z-statistics in parentheses, clustered at the level of the state.• * significant at 10%; ** significant at 5%; *** significant at 1%.• Rather than the coefficients, we report the change in the probability for an infinitesimal change in each independent, continuous variable and, by default, the discrete change in the probability for dummy variables.• Multipliers defined as the inverse of the probability that the observation is included due to the sampling design are used in the regressions.

Table 2.6: The impact of different measures of pendency on the occurrence of breach of contract

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
pendency percentage of total cases	0.1113						
in High Courts in 1999	(4.28)***						
pendency percentage of total cases		0.1350					
in High Courts in 1998		(7.41)***					
expected duration of a trial			0.0169				
in High Court in 1996[1]			(8.98)***				
pendency rate in 96[2]				0.0568			
				(5.86)***			
expected duration of a trial					0.0184		
in High Court in 1995[1]					(8.70)***		
pendency rate in 95[2]						0.0553	
						(5.65)***	
number of cases solved divided by							-0.0513
number of cases pending in1999							(4.78)***
state-level controls	yes	yes	yes	yes	yes	yes	yes
firm-level controls	yes	yes	yes	yes	yes	yes	yes
sector dummies (NIC2)	yes	yes	yes	yes	yes	yes	yes
Observations	172484	172484	172484	172484	172484	172484	172484

• Dependent Variable: non-recovery of service charges, fees, credit: =1 if the entreprise experienced a major problem of non-recovery of service charges, fees, credit; =0 otherwise.•[1]expected duration of a case in High Court, measured in number of pending cases at the beginning of the period plus number of filed cases within the year divided by the number of cases disposed of within the year. Unit=years. Source: Law commission reports, Annual Reports of the Ministry of Law and Justice.•[2]the pendency rate is therefore defined as 1-1/duration.Note: pending beginning+filed=pending end+solved.•[3]obtained from the governmental publication "Crime in India".• Probit regressions. Robust z-statistics in parentheses, clustered at the level of the state.• * significant at 10%; ** significant at 5%; *** significant at 1%.• Rather than the coefficients, we report the change in the probability for an infinitesimal change in each independent, continuous variable and, by default, the discrete change in the probability for dummy variables.• Multipliers defined as the inverse of the probability that the observation is included due to the sampling design are used as weights in the regressions.

Table 2.7: The judiciary's technology

	(1)	(2)	(3)	(4)
Dependent Variable	number of solved cases		number of pending cases (end year)	
number of filed cases	0.4880	0.8157	1.1652	1.1117
	(2.88)*	(8.96)***	(2.89)*	(1.76)
total population	0.8717	-0.4881	5.1621	6.0055
	(1.55)	(1.39)	(1.75)*	(1.75)
population growth rate		0.3384		-4.5837
		(0.79)		(1.98)*
Four-year lagged per capita		-2.0597		17.7354
education expenditure		(1.21)		(1.53)
Four-year lagged per capita		0.0113		0.8461
health expenditure		(0.01)		(0.14)
Four-year lagged per capita		9.5364		-57.7160
other expenditure		(2.03)*		(1.35)
Four-year lagged state taxes as a		5.3878		-49.3674
percentage of state domestic product		(1.76)*		(1.72)
state fixed effects	yes	yes	yes	yes
year fixed effects	yes	yes	yes	yes
Constant	-6,690.6195	7,729.2324	10,539.6074	-27,306.8007
	(3.20)***	(0.58)	(0.90)	(0.26)
Observations	400	311	400	311
R-squared	0.92	0.99	0.89	0.92

• Data from 1971 to 1995 for 16 states (=400 observations).• Panel data regressions with state and year fixed effects. • * significant at 10%; ** significant at 5%; *** significant at 1%.• Block bootstrapped significance tests are reported next to the t-statistics.

Data Appendix: Table of means

Variable	source	N. of obs.	Mean	Std. Dev.
Pendency percentage in 1999		16	0.69	0.14
Pendency percentage in 1998		16	0.67	0.14
Expected duration of a trial in High Court in 1996 (years)	Annual Report	16	2.5	1.32
Pendency percentage in 1996	Ministry of Law,	16	0.45	0.32
Expected duration of a trial in High Court in 1995 (years)	Justice and Company Affairs	16	2.40	1.24
Pendency percentage in 1996		16	0.43	0.32
Number of cases solved divided by number of cases pending in 1999		16	0.23	0.21
probability of non-recovery of service charges, fees, credit		176133	0.10	0.31
probability of working on a contract basis		176133	0.07	0.26
probability of relationship-specific investment contract when contract		12621	0.65	0.48
probability of shortage of capital		176133	0.42	0.49
having obtained a loan		176133	0.09	0.28
loan from a formal institution (financial institutions, government, bank)		176133	0.03	0.18
loan from a business friend (contractor, moneylender)	National Sample Survey	176133	0.03	0.17
loan from a relative(relative, partner) conditional on having a loan	55th (2000) round	15668	0.15	0.35
partnership with members of the same household when partnership		3619	0.51	0.50
Indebtedness		176133	0.10	3.09
Level of interest payments as a proportion of firms' profits		176133	0.01	0.08
Proportion of temporary to total employment in the firm		176133	0.08	0.22
Gender of the owner		176133	0.09	0.28
Number of unrelated other activities undertaken by the owner		176133	0.50	1.32
Registration of the firm		176133	1.78	0.41
State gross domestic product per capita		176133	14.22	5.30
Per capita income growth rate		176133	2.52	2.29
State school enrolment		176133	83.58	16.35
Literacy rates	Economic Surveys,	176133	65.38	9.88
State amount of credit per capita	http://indiabudget.nic.in/	176133	0.42	0.41
State length of roads per capita		176133	2.57	1.40
Access to safe drinking water		176133	65.25	18.65
State death rate		176133	8.50	1.25
State male life expectancy		176133	64.39	3.1
State expenditure on the organs of state	Rajya Sabha and Lok	176133	19809	9171
Unit cost per policemen	Sabha unstarred	176133	118359	15272
Number of Panchayats per million inhabitants	questions,	176133	236.4	130.15
Number of rural planning commissions per million inhabitants	www.indiastat.com	164007	8.53	5.32

Chapter 3

Decoding the Code of Civil Procedure: Explaining Variations in the Speed of the Judiciary Across States and Years in India.

3.1 Introduction

This chapter will examine India's Code of Civil Procedure in order to explain why its judiciary is so congested. I read and classified the 430 amendments to the Code of Civil Procedure enacted by High Courts between 1971 and 1996. In particular, I find that the 94 amendments complexifying procedures that have to be followed by the Courts (subsequently named "Court red tape" amendments), not explicitly designed to deteriorate speed, significantly increase expected duration of trials in High Courts. I also read and classified all conflicting judicial decisions taken by High Courts between 1971 and 1996. I find that conflicting judicial decisions, in other words violations of precedents already

established by High Courts, increase trial duration as judges are required to spend considerable time in choosing between several conflicting views. I then use these "Court red tape" amendments, not explicitly designed to deteriorate speed, and conflicting decisions, which, I will argue, are temporally exogenous, as instrumental variables for the expected duration of trials in order to measure the impact of judicial slowness on economic performance. I find that slower judiciaries reduce access to credit markets in the agricultural sector, leading to depressed agricultural outputs.

The judiciary is a topic of first-order importance. In India, the speed of the judiciary has been identified as a key problem. Data on cases pending in courts indicate that there were 3.1 million cases pending in 21 High Courts and 20 million in subordinate courts in 2000[1]. Extreme examples of judicial slowness refer to cases taking 47 years to be resolved, by which time the plaintiff had died. Slow judiciaries could heavily shape economic activity. First, slow judicial enforcement increases the opportunistic behavior of borrowers: anticipating that creditors will not be able to recover their loans quickly via courts, borrowers will be more tempted to default. Creditors respond to this strategic behavior of borrowers by reducing the availability of credit. Second, the probability of harsh punishment in monetary or non-monetary terms heavily dissuades opportunistic agents to default ex-post on previous agreements. Slower judiciaries make the discounted value of punishment lower, thereby weakening incentives to cooperate. For example, if a firm wants to undertake an investment in order to supply another with a particular asset, the possibility of post-contractual opportunistic behavior by the partner arises once the investment costs are sunk. A speedy judicial system enforcing contracts swiftly could limit post-contractual opportunistic behavior and foster investment. It is therefore important to know why the judiciary is so slow in India.

This paper contributes to the empirical literature on the effects of institutions on

[1]Law's Delays: Arrears in Courts, 85th Report, Department-related parliamentary standing committee on Home affairs, Parliament of India, Rajya Sabha. http://rajyasabha.nic.in/book2/reports/home_aff/85threport%20.htm

economic performance. One key question in this literature is causation, because institutions are arguably endogenous. There are some successful attempts at resolving the endogeneity and causality issues (Mauro, 1995; Hall and Jones, 1999; Acemoglu et al, 2001).

To open the black box of "institutions", I focus in this paper on the judiciary, in particular its speed, which has been identified in India as one of its key problem. The literature often exploits spatial variation in the quality of the judiciary to identify its effect on economic activity. Knack and Keefer (1995) relate professional country risk measures provided by business experts to their measure of judicial quality which is the amount of contract-intensive money (the difference between M2 and cash). However, it might be, for example, that states that have in general better policies are also more inclined to have efficient judiciaries. But if that is the case, judicial quality just reflects the general better economic policies and in itself may not be important in driving better economic outcomes.

Djankov et al. (2003) have made an important contribution to the study of courts. They measure judicial formalism in 109 countries around the world. They find that judicial formalism is greater in civil law than in common law countries and greater formalism is associated with less consistency, less honesty, and less fairness in judicial decisions. Endogeneity concerns are addressed by using legal origin as an instrument for judicial formalism. This paper differs in three ways. First, in contrast to Djankov et al. (2003), this paper uses a within-country analysis of India. By working within a single country, I am able to control for a range of factors and influences that cannot be as convincingly controlled for in cross country data. This allows one to identify the effect of judicial efficiency separately from that of laws, legal origin, and other country-wide characteristics. Second, the other difference to Djankov et al. (2003) is that the focus in my paper is on economic, not only judicial, outcomes. Third, this paper generates clear policy implications about the desirability of a Code of Civil Procedure reform.

Jappelli et al (2005) present a model of the effect of judicial enforcement on credit markets and then test it using panel data from Italian provinces. The authors find, among other things, that the duration of civil trials (measured by actual duration in the past) as well as the stock of pending civil trials per inhabitant are negatively correlated with loans granted to domestic companies and positively correlated with measures of credit constraints. Cristini et al (2001) relate differences in judicial efficiency across Argentinean provinces to the size of provincial credit markets. Castelar Pinheiro et al (2001) perform a similar analysis in Brazil. In these three papers, no attempt is made to deal with the potential endogeneity of the judicial inefficiency measures.

In contrast, in this paper, I focus on procedural complexity and ambiguity as two potential reasons for the slowness of Courts in India. I then exploit the spatial and temporal variation of "Court red tape" amendments and conflicting judicial decisions to instrument the impact of expected duration of a trial in High Court on economic activity. I do not claim that "Court red tape" amendments and conflicting judicial decisions are exogenous. However, there are several reasons as to why these variables could represent good instrumental variables. First, "Court red tape" amendments were not explicitly designed to deteriorate the speed of Courts. As such, they were not endogenous to the judicial slowness at the time the amendment was passed. Other amendments, clearly endogenous because explicitely stating speedy disposal of cases are not considered (and shown to be indeed endogenous with overidentification tests). Second, I will argue that the temporal variation in conflicting judicial decisions is exogenous as they arise after the arbitrary occurrence of cases pertaining to ambiguous sections of the Code of Civil Procedure. Third, I use a panel data analysis and include State fixed effects to account for permanent differences across States in policies and outcomes. If systematic determinants of amendments are time invariant characteristics, then this will remove concerns about endogeneity. Fourth, I try to account for forces leading to amendments enactment by looking at the political influence of parties in determining amendments and at the political

representation of certain groups likely to influence amendments.

The paper is structured as follows. section 3.2 describes data collected concerning amendments to the Code of Civil Procedure between 1971 and 1996 and conflicting decisions made by High Courts. section 3.3 focuses on theoretical issues, explaining both the reasons behind these amendments and the potential impact of the judiciary on economic activity. This section clarifies the econometric specification used by specifying what control variables and what economic outcomes should be used. section 3.4 contains an empirical analysis of the effects of both amendments and conflicting decisions on the expected duration of High Court trials. section 3.5 examines the effects of the judiciary on economic outcomes. section 3.6 concludes.

3.2 Data

Judicial institutions are the same across courts and States. The Indian judiciary operates on three levels: a single Supreme Court at the federal level; High Courts in each of the States; and, at lower levels, district judges for civil cases and session judges for criminal cases. Speed has been identified as a key problem. Data on cases pending in courts indicate that there were 3.1 million cases pending in 21 High Courts and 20 million in subordinate courts in 2000[2]. Examples of judicial slowness are striking:

> "the highest court in the country, the Supreme Court, took 11 years to acquit the headmaster of a school on the charge of taking a bribe for signing the salary arrears bill of his school. In another case of judicial delay, the victim was former Union Law Minister, Dr. B.R.Ambedkar. The judgement came in his lifetime but it took 47 years for the Maharashtra government to

[2]Law's Delays: Arrears in Courts, 85th Report, Department-related parliamentary standing committee on Home affairs, Parliament of India, Rajya Sabha. http://rajyasabha.nic.in/book2/reports/home_aff/85threport%20.htm

execute the decree passed in his favour against illegal encroachment of his land by Pakistani refugees. By then he was dead.[3]"

Legal experts argue that the Code of Civil Procedure is a major reason why India's judiciary is so slow. To prove this, I will analyze how State amendments to the Code affect the expected durations of High Court trials. I will also use the 144th Report on "Conflicting Judicial Decisions Pertaining to the Code of Civil Procedure, 1908" in order to understand when and which High Courts violated their own precedents. This may have the effect of increasing expected durations of High Court trials.

3.2.1 Amendments to the Code of Civil Procedure

The Code of Civil Procedure (1908) contains India's laws relating to procedures in suits and civil proceedings. They may be summed up as follows: procedures for filing civil cases, court powers for passing various orders, court fees and stamps involved in the filing of cases, rights of the parties to cases, namely plaintiff and defendant, jurisdictions and parameters within which civil courts must function, specific rules for case proceedings, right of appeals, reviews and references. The Code has been amended from time to time by various Acts of Central and State Legislatures. The Code is divided into two parts, namely Sections and Orders. While the main principles are contained in the former, the detailed procedures with regard to matters dealt with by the Sections are spelled out in the latter. According to Section 122, High Courts have power to amend, by rules, procedures laid down by the Orders. These High Court amendments set precedents for the entire State since India functions according to the common law system—the actions of High Court judges set precedents for the functioning of subordinate courts in their particular State. The exercise of these powers has brought 430 amendments to the Orders by various High Courts since 1968. I read each of these amendments and classified them

[3]Krishnamoorty, Dasu, *Judicial Delays*, Indolink, editorial analysis, 2003

according to three broad categories: "explicit speed" amendments designed to favour expeditious justice, "Court red tape" amendments which add procedures to be followed by the Court, and "speed" amendments likely to have an effect on speed by whatever means[4]. Table 3.1 defines each amendment category and presents a number of descriptive statistics. I will now provide examples for each of these three categories.

The most obvious amendments likely to affect speed are those that explicitly spell out some notion of time limitation. These will be called "explicit speed" amendments. Consider Order 9—Appearance of Parties and Consequences of Non-Appearance, Rule 5 of the Civil Procedure Code:

> "**Dismissal of suit where plaintiff, after summons returned unserved, fails for one month to apply for fresh summons.**-Where, after a summons has been issued to the defendant, or to one of several defendants, and returned unserved, the plaintiff fails, for a period of one month from the date of the return made to the Court by the officer certifying to the Court returns made by the serving officers, to apply for the issue of a fresh summons the Court shall make an order that the suit be dismissed as against such defendant, unless [...]"

Compare it with the Bombay High Court amendment enacted in 1987:

> "**Dismissal of suit where plaintiff, after summons returned unserved, fails for *two months* to apply for fresh summons.**-Where, after a summons has been issued to the defendant, or to one of several defendants,

[4] 'Speed amendments' include the 'explicit speed' and 'Court red tape amendments'. They also include 'defendant red tape' (adding procedures to the defendant which slow things down), 'poor' (explicitly pro-poor amendments which increase incentives for the poor to file cases and thus delay overall judicial speed), 'agricultural' (explicitly pro-agricultural), 'business' (explicitly pro-business), 'government' (explicitly pro-government), 'judgement-debtor' (explicitly pro-judgement debtor), 'demand-side solution' (which reduce incentive to file cases and thus unburden the judiciary), 'plaintiff red tape', and 'certainty' (which increase the certainty of an outcome and thus increase incentives to file cases).

and returned unserved, the plaintiff fails, for a period of *two months* from the date of the return made to the Court by the officer certifying to the Court returns made by the serving officers, to apply for the issue of a fresh summons the Court shall make an order that the suit be dismissed as against such defendant, unless [...]"

I have italicized the difference between the two amendments. This difference could potentially affect case backlog. It implies that, in India, a case is dismissed after one month if the plaintiff fails to apply for a fresh summons once a defendant summons returns unserved. However, in the Bombay High Court, and consequently in all Maharashtra courts, cases are dismissed after only two months. This may have slowed down case dismissal in Maharashtra State after 1987. I therefore classify this amendment as a -1 in the "explicit speed" variable forever after 1987 for Maharashtra[5]. There have been 50 such amendments in India between 1971 and 1996. These can be seen in Table 3.1, Column (1) (Column (2) presents the sum of the amendments weighted by their direction, Column (3) presents the ratio of the weighted sum by the total number of amendments: "explicit speed" amendments in India generally favour the shortening of procedures). It is also worth noting that the time limit imposed in this particular example cannot be modified or extended by courts. I noted "explicit speed" amendments where provisions state that a court may extend a time limit if it wishes to do so. This is important because it is often said that any amendment is inefficient if it goes against the habits of the court and if the latter retains the possibility of modifying time limits on a case by case basis. There are 42 explicit speed amendments where discretion regarding time limits is left to

[5]It is interesting to note that this one month period was originally three before a pan-India amendment in 1976. It was later changed in 1999 in another pan-India amendment to just 7 days! The 1999 amendment had the explicit objective of facilitating the swift disposal of civil suits and proceedings. I will not study these amendments since I include year fixed effects in my panel data analysis in order to account for any common macroeconomic shocks at the national level. However, the fact that this duration was modified in 1999 would seem to indicate that this order is of particular importance in determining judicial speed.

the courts. It is important to keep this in mind when evaluating the impact of these amendments.

More subtle amendments will also have an effect on speed. The second category of amendments concerns procedures courts must follow. Consider Order 39—Temporary Injunctions and Interlocutory Orders, Rule 4:

> "**Order for injunction may be discharged, varied or set aside.-** Any order for an injunction may be discharged, or varied, or set aside, by the Court, on application made thereto by any party dissatisfied with such order [...]."

Compare this with the Madhya Pradesh High Court amendment enacted in 1984:

> "**Order for injunction may be discharged, varied or set aside.-** Any order for an injunction may be discharged, or varied, or set aside, by the Court *for reasons to be recorded, either on its own motion* or on application made thereto by any party dissatisfied with such order [...]."

Reasons for putting aside an injunction must be recorded in Madhya Pradesh after 1984. This slows down the courts. I therefore classify this amendment as a +1 in the "court red tape" variable from 1984 onward for Madhya Pradesh and expect a positive correlation with the expected duration of High Court trials. There have been 94 such amendments in India between 1971 and 1996 (see Figure 3.1 for a graph of these "court red tape" amendments by State and year).

The final category concerns "speed" amendments. This category includes any amendments having an effect on speed. It includes "explicit speed" amendments, likely to increase speed, and "Court red tape" and "Defendant red tape" amendments, likely to decrease speed. The latter are amendments that add procedures for the defendants. Consider Order 21—Execution of Decrees and Orders, Rule 2, Sub-Rule 2:

"**Payment out of Court to decree-holder.**- (2) The judgement-debtor or any person who has become surety for the judgement-debtor may also inform the court of such payment or adjustment [...]."

Compare this with the Bombay High Court amendment of 1983:

"**Payment out of Court to decree-holder.**- (2) The judgement-debtor or any person who has become surety for the judgement-debtor may also inform the court *by an application in writing supported by an affidavit* of such payment or adjustment [...]."

This type of amendment increases the defendant's procedural burden and is likely to increase the duration of High Court trials. I therefore classify it as a +1 in the "defendant red tape" variable from 1983 onward for Maharashtra and expect a positive correlation with the expected duration of High Court trials.

Other amendments may decrease judicial speed by affecting the demand-side of the judiciary. In fact, some amendments are likely to affect litigants' willingness to go to court. This in turn affects case backlog and thus overall judicial speed. I classify these demand-side amendments in eight different categories according to sections of the population they are likely to affect. I call them: "poor", "agricultural", "business" "government", "judgment-debtor", "demand-side solution", "plaintiff red tape" and "certainty". Table 3.1 provides a definition of each as well as some descriptive statistics. Data Appendix 1 provides examples of such amendments. "Speed" amendments are the sum of these eight categories and "explicit speed", "Court red tape" and "Defendant red tape" amendments.

This allows me to define a final category: "implicit speed" amendments equal to the difference between "speed" and "explicit speed" amendments. There have been 288 amendments of this type in India between 1971 and 1996 (see Figure 3.2 for a graph of these "implicit speed" amendments by State and year).

The distinction between "explicit" and "implicit speed" amendments is important. As Besley and Case (2000) has shown, if high court amendment making is a purposeful action, one responsive to economic, political or even judicial conditions within the State, then it is necessary to identify and account for the forces leading to these amendments. A State enacting "explicit speed" amendments may well be considered more "advanced". And being more "advanced", it will also have better economic performance. This leads to a spurious correlation between "explicit speed" amendments and economic performance arising from unobserved State heterogeneity. "Explicit speed" amendments are clearly endogenous responses to particular problems. In contrast, "implicit speed" amendments are not by definition explicitly designed to increase speed. They should be preferred over the former.

In this section, I have isolated four amendment types likely to affect judicial speed: the "explicit speed", "court red tape", "speed" amendments and by extension, "implicit speed" amendments. Data Appendix 2 describes Allahabad State's complete amendment history, providing an overall view of the codification.[6].

I have codified here each and every amendment to the Code of Civil Procedure from 1971 to 1996. I will now focus on another potential reason why courts are slow in India: the conflicting decisions of High Courts. The latter's spatial and temporal occurrence allows me to isolate the impact of the Code's ambiguity on judicial speed.

3.2.2 Conflicting judicial decisions

Legal experts have long argued that ambiguity in Indian law increases delays in case treatment. For example, the Indian Law Commission's 136th report entitled "Conflicts in High Courts decisions on central laws—how to foreclose and how to resolve' states that "those who are entrusted with the function of adjudicating on questions of law

[6]Only 'implicit' and 'explicit speed', 'court red tape', and 'defendant red tape' are included. 'Speed court' is equal to 'explicit speed' if the court itself is in a position to set time limits. Other types of amendments included in 'speed' and 'implicit speed' are not presented.

must spend considerable time in choosing between two or more possible views on a subject which falls to be considered before them'[7]. This is also true for the Code of Civil Procedure. This code is so ambiguous that opposite decisions on similar cases have been reached in different High Courts. An even worse problem is when the same High Court arrives at opposite verdicts on similar cases at different times. The underlying intuition is that, after a violation of its own precedent by a High Court, judges have no choice but to spend considerable time on choosing between two or more possible views on the subject at hand. Studying every such violation in the period from 1971 to 1996 has allowed me to relate, in the empirical section, their occurrence in certain States at certain times to the expected duration of High Court trials in view of seeing whether or not conflicting judicial decisions caused by the Civil Procedure Code's ambiguity may explain the country's slow judiciary.

The occurrence of conflicting judicial decisions could have another effect on the judiciary. As the Law Commission of India's 136th report states, "those whose business is to advise persons who consult them on questions of law, find it difficult to give such advice with confidence where the decisions are conflicting"[8]. In other words, such High Court reversals may lead to increased uncertainty in case outcome. This might decrease litigants' willingness to file cases and thereby increase judicial speed. The net impact of conflicting judicial decisions on the expected duration of a High Court trial is therefore an empirical question. The empirical section of this paper will relate the occurrence of the same High Court precedent violations to the expected duration of High Court trials. I will now describe the data collected.

The Law Commission of India published in 1992 its 144th report on "Conflicting

[7] p. 1, "Conflicts in High Courts decisions on central laws-how to foreclose and how to resolve", Law Commission of India's 136th report.
http://lawcommissionofindia.nic.in/101-169/Report136.pdf

[8] p. 1, "Conflicts in High Courts decisions on central laws-how to foreclose and how to resolve", Law Commission of India's 136th report.
http://lawcommissionofindia.nic.in/101-169/Report136.pdf

Judicial Decisions Pertaining to the Code of Civil Procedure, 1908' by K.N. Singh, India's Chief Justice from 25.11.1991 to 12.12.1991. This report summarises conflicting decisions made by High Courts arising from ambiguity and lack of clarity in the Civil Procedure Code. It presents a total of 30 different Code rules having led to opposite decisions by different High Courts, succinctly describing the Code's ambiguity and listing each High Court's opposing view. It includes 163 opposing decisions by different High Courts involving these 30 rules (see Figure 3.3 for a graph of all the decisions taken by High Court violating (+1) or confirming (-1) prior judgements). In the following example I will consider an extreme case in which a High Court contradicted itself in two different cases based on the same point of law.

Order 23, Rule 1(3) allows for the withdrawal of suits with liberty to file fresh suits under certain circumstances, namely "formal defect" or "sufficient grounds". The question here is whether or not the rule applies in cases of partial or total suit abatement, that is, on the death of a party. Ambiguity is caused by another rule which explicitly mentions the death of a party. Order 22—Death, Marriage and Insolvency of Parties—Rule 4 states that in the case of the death of a sole defendant, or in the case of the death of one of several defendants and the right to sue does not survive against the surviving defendant, then the Court, on an application made on behalf of the dead party, shall cause the legal representative of the deceased defendant to be made a party and shall proceed with the suit. However, if no application is made, the suit shall abate as against the deceased defendant. Rule 9 further states that where a suit abates under this order, no fresh suit shall be brought on the same cause of action. Therefore, allowing the plaintiff to withdraw in such circumstances and file a fresh suit would allow him to bypass Order 22. This was the view taken in a 1936 Calcutta Case[9]. In the latter, a suit was directed against the sole dependant for possession. On his death, his legal representatives were not substituted and, consequently, the suit abated. Withdrawal was not permitted.

[9]Ramesh v Deo Mehar Bibi, 40 CWN 1019 (RC Mitter J.)

However, in a later 1953 Calcutta Case[10], a leave to withdraw was granted in a case where the suit abated upon the death of one co-trespasser. Nevertheless, the view taken in 1936 reappeared later in a 1984 case[11]. It is worth noting that K.N. Singh (ex-Chief Justice of India and author of the report) recommended clarifying the code in such a way that the death of a party would not constitute grounds for withdrawal. This recommendation was never introduced and the ambiguity remains to this day.

I argue that High Court reversals such as these increase the likelihood of longer case durations. In fact, in cases where the defendant dies, judges are required to carefully consider not only Order 23, Rule 1(3), Order 22—Death, Marriage and Insolvency of Parties—Rule 4 and Rule 9, but also the following precedents: the 1936 Calcutta Case: Ramesh v Deo Mehar Bibi, 40 CWN 1019 (RC Mitter J.); the 1953 Calcutta Case: Hakir Mahamed v Abdul Majid, AIR 1953 Cal 588, para 3; and the 1984 Calcutta Case: Shyam Ray v Harnam De, AIR 1984 Cal 67, 70 para 12. Because Singh's recommendation was not adopted, coming to a decision is all the more difficult. In this case, I increment by 1, from 1984 on in West Bengal, a "violation of a precedent established by the same High Court' variable. I also subtract it by 1 when a decision taken in a case is confirmed explicitly by another later case. There have been 24 such occurrences in India's States between 1971 and 1996 (see Figure 3.4 for the graph of this variable per state per year). I expect to see a positive correlation with the expected duration of High Court trials.

The crucial feature of the analysis is the temporally arbitrary occurrence of this ambiguous case. In this particular example, the "violation of a precedent established by the same High Court" variable takes the value 1 in 1984 in West Bengal due to the occurrence of a death of one party in a case in 1984 and the subsequent necessity to use Orders 22 and 23 of the Code of Civil Procedure. In contrast with the amendments strategy followed earlier, the temporal variation in the "violation of a precedent established by the same High Court" variable is not endogenous to the economic, political or judiciary's

[10]Hakir Mahamed v Abdul Majid, AIR 1953 Cal 588, para 3
[11]Shyam Ray v Harnam De, AIR 1984 Cal 67, 70 para 12.

conditions, but is rather due to the arbitrary occurrence of cases pertaining to ambiguous sections of the Code of Civil Procedure.

Spatial variation in this variable is not necessarily random. The fact that judges contradict precedents previously established by their own High Court is perhaps merely a reflection of their ability. The "violation of a precedent established by the same High Court" could simply be a measure of a High Court's quality. An empirical analysis relating this variable to the expected duration of a trial in High Court could possibly confuse the Code of Civil Procedure's ambiguity with the quality of a particular court. I therefore control for the quality or level of competence of a particular court in my empirical analysis.

This section has isolated two determinants of judicial speed: Civil Procedure Code amendments likely to affect expected durations of trials ("explicit speed", "Court red tape", "speed" and "implicit speed" amendments) and conflicting decisions. I will now discuss possible endogeneity concerns arising from these two determinants as well as the expected impact of the judiciary on economic activity.

3.3 Theory

This paper attempts to find the causes of judicial inefficiency in India. I have identified 94 "Court red tape" amendments and 24 conflicting judicial decisions between 1971 and 1996 which could affect the expected duration of a trial in High Court.

The paper's second objective is to relate the judiciary's speed to economic performance. Cross section analysis is not appropriate in answering such a question since unobserved State heterogeneity might influence the results. I employ a panel data analysis dealing with unobserved time constant State heterogeneity. There might still, however, be unobserved time variant State heterogeneity. One response to this problem would find exogenous sources of variation in the quality of the judiciary. This would allow for a causal interpretation of judicial quality on economic outcomes. This paper seeks to

locate sources of variation in the speed of the judiciary. Immediately after a "Court red tape" amendment or a "violation of a precedent established by the same High Court" in a particular State, I expect the duration of a High Court trial to increase and thus economic performance to be affected. This is the instrumental variable approach intuition, one in which "Court red tape" amendments and "violation of a precedent established by the same High Court" are instrumental variables for the expected duration of High Court trials in a regression on economic performance.

Two questions remain. First, one instrumental variable approach assumption is that instruments must be exogenous. I do not claim that "Court red tape" amendments or a "violation of a precedent established by the same High Court" are exogenous. I will try in this section to analyze reasons why such amendments or violations occur. This is important because we need to account for the forces leading to these amendments or violations in the econometric specifications [Besley et al, 2000]. Second, I need to clarify exactly what economic outcomes are likely to be influenced by the judiciary; just what are the mechanisms through which the judiciary affects economic activity. I will now attempt to answer these two questions.

3.3.1 Endogeneity of the amendments

The paper uses spatial and temporal variation in amendments afforded by the Indian federal system to estimate the impact of amendments to the Code of Civil Procedure on the judiciary's outcomes. However, time-varying State level amendments can be studied as either left or right hand side variables. These amendments may be responsive to economic, political or judicial conditions within the State. It is necessary to identify and account for the forces behind Civil Procedure Code amendments if we are to obtain unbiased estimates of these amendments' impact. For example, "explicit speed" amendments are obviously responsive to judicial conditions. Amendments with the explicit objective of delaying reduction are surely enacted to solve this problem. For this

reason, I will not consider in the paper's regressions "explicit speed" amendments. On the other hand, "Court red tape" amendments may be considered less endogenous to judicial delays. "Court red tape" amendments do not explicitly posit delay reduction as an objective. But the latter may still be responsive to economic, political or judicial conditions within the State. Consequently, it is necessary to study who enacts these amendments. Under Section 122 of the Code of Civil Procedure, High Courts have the power to amend, by rules, procedures laid down in the Orders. No political interference in decision making is expected in theory; however, considering the tumultuous relations between India's Executive and Judiciary, this assumption seems unreasonable. Political parties and sensitivities in each State influence the making of amendments. It is particularly instructive to examine the history of conflicts between Executive and Judiciary between 1971 and 1996, and in particular the history of judge appointment, in order to determine the degree of independence enjoyed by decision-making courts. To do this, I will borrow from Bhagwan D. Dua's survey in "A Study in Executive-Judicial Conflict: The Indian Case".

In the 1970s, India's judiciary was free from any political interference. In June 1975, Allahabad's High Court found the Prime Minister guilty of electoral fraud and ordered her removed from Parliament and banned from running for an additional six years. Instead of confronting the charges, Mrs. Gandhi declared a State of Emergency and launched a massive crackdown on civil liberties and political opposition. Judges then began to interpret the Constitution in light of the new political climate.

The Janata Interregnum (1977-79) attempted to restore to judges some degree of self-confidence. The government cancelled Mrs. Gandhi's mass transfer of High Court judges in order to emphasize that the Constitution was not in the business of punitive transfers (i.e. transfers without consultation of India's Chief Justice) of judges.

However, the return to power of the Congress (I) Party in 1980 revived memories of the Emergency regime. Mrs. Gandhi has often viewed the courts as centres of political

opposition and in 1981 bluntly called into question the judicial integrity of the Janata-appointed judges[12]. Chief Justice Chandrachud complained that:

> "Since the Executive is controlled by political leaders...it may, it is feared, transfer a judge to a far-off place like Sikkim, the Andaman Islands or Assam, or refuse to grant him further extension if he does not toe the line"[13].

Due to internal dissension, the Supreme Court undermined in the same year its independence in the Judges' Transfer Case, in which the majority of a seven-judge Constitutional Bench offered the government carte blanche to hire Supreme Court judges, fire temporary judges and transfer (except on a mass scale) High Court judges without the consent of India's Chief Justice. In other words, Mrs. Gandhi was given a free hand to manage the judiciary as she liked.

In 1993, the policy of transferring judges without consent was abandoned following the Second Judges' case. The Supreme Court introduced the concept of the primacy of the Chief Justice of India in matters of recommending persons for appointment to the higher judiciary[14].

To conclude this short survey, I expect political parties to influence the passing of various amendments. However, political interference was limited to certain periods and parties. I measure a State's political inclination by the proportion of seats won in Legislative Assemblies by four different party groupings: the Congress Party (Indian National Congress, Indian Congress Socialist, Indian National Congress Urs), a hard left grouping (Communist Party of India, Communist Party of India Marxist), a soft left grouping (Socialist Party, Praja Socialist Party), and Hindu parties (Bhartiya Janata Party, Bhartiya Jana Sangh). I include these terms in the regressions and also interact these variables with an all-India dummy at value 1 in cases where political interference is expected,

[12] *India Today*, January 31, 1982, p.62
[13] *Statesman weekly*, May 2, 1981.
[14] *Frontline*, A flawed mechanism, ZV.Venkatesan, 06/06/2003.

such as during the Emergency Regime (1975-77) and during the years 1981-93 when the First Judges' case was prevalent (described in Figure V). I include the political variables interacted with this dummy as control variables in all the regressions in order to remove bias resulting from omission of these variables.

Another possibility is that certain groups not divided along party lines but sharing common interests might succeed in influencing the judiciary. An intuitive hypothesis would posit the influence of scheduled castes and tribes in the Legislative Assemblies on the judiciary which favoured their particular groupings. The suggestion that such castes and tribes would strive to improve access to justice for poorer sections of the society would appear intuitive. I therefore expect "Scheduled Castes and Scheduled Tribes in Legislative Assemblies" to exert pressure on courts in regards to demand-side amendments favouring judicial access. There is growing evidence suggesting that seat reservation affects public goods allocation in a way that favours the group benefiting from the reservation. Pande [2003] found that reservations of seats for Scheduled Castes and Scheduled Tribes in State Legislative Assemblies led to increased transfers towards these groups. After accounting for the direct impact of the fraction of the population that comprises a State's Scheduled Castes and Scheduled Tribes, a 1% rise in the fraction of seats reserved to Scheduled Castes in State Legislature is associated with a 0.6% increase in job quotas for Scheduled Castes. A 1% rise in the fraction of seats reserved for Scheduled Tribes in State Legislatures is associated with an increase of 0.8 percentage points in the share of total State spending devoted to welfare programs targeted to Scheduled Tribes. At the Panchayat level, Besley et al. [2004] found that reservation of leadership positions for a Scheduled Caste or Scheduled Tribe increases—by about 7 percentage points—the likelihood that a Scheduled Castes or Scheduled Tribes village household has access to toilets, electricity connections or private water connections via government schemes. I have thus included the proportion of seats reserved for Scheduled Castes and Scheduled Tribes as well as the group's population share according to government census following

Pande [2003].

This section shows that the composition of executive power and Scheduled Castes/ Scheduled Tribes representation must be accounted for in all regressions because the judiciary is not free, during certain periods, from political interference affecting the enactment of amendments. The second question of how the Judiciary affects economic activity remains.

3.3.2 A model for the Judiciary

There is increasing evidence suggesting that court system efficiency is important to well-functioning economies. Slow judiciaries increase costs of accessing legal systems and favour those with more extra-legal bargaining power. There are two key areas where courts may play a role in India: credit markets (difficulties in repaying loans) and contract enforcement. I expect legal system inefficiency to contribute to poor conditions for society's most vulnerable as well as for its most intensive users of the judiciary. For example, I expect the poor (society's most vulnerable) and creditors (as opposed to debtors) I will now describe the mechanisms through which the judiciary affects credit markets and firms' contracting behavior.

Judicial systems influence firms' debt contracts. As Pagano et al [2002] explain:

> "The key function of courts in credit relationships is to force solvent borrowers to repay when they fail to do so spontaneously. By the same token, poor judicial enforcement increases the opportunistic behavior of borrowers: anticipating that creditors will not be able to recover their loans easily and cheaply via courts, borrowers will be more tempted to default. Creditors respond to this strategic behavior of borrowers by reducing the availability of credit."

The authors develop a model in which collateral is used as a device to solve credit rationing. They find that improved judicial efficiency reduces credit rationing and expands

lending. One should expect inefficient judiciaries to disproportionately affect sections of society unable to provide collateral. I will test this theoretical implication by examining the situation of farmers, who typically comprise the poor in India.

The second intuitive consequence of an imperfect judiciary is the modification of economic agents' willingness to cooperate in previously signed contracts. We know that judiciaries act as important deterrents to fraud that might be more economically attractive in the short run. The probability of harsh punishment in monetary or non-monetary terms would heavily dissuade opportunistic agents to default ex-post on previous agreements.

One could also expect the quality of judiciaries to impact on investments undertaken by the firm. I consider the case where a firm would undertake an investment in order to supply another with a particular asset. However, as Klein et al (1978) emphasized, the possibility of post-contractual opportunistic behavior arises. Indeed, to induce the supplier to undertake an investment, a firm can either write a long-term contract with favorable terms for the supplier or guarantee exclusivity rights. But once the costs of the investment are sunk, there is an immediate incentive for the firm to renege on the contract and capture the suppliers' rents. Alternatively, if search costs to find a new supplier are high, there is an immediate incentive for the supplier to use its monopoly power to impose higher prices. These frictions could reduce the incentive to invest; Klein et al (1978) conclude that vertical integration will supersede market systems in such cases. But another way to limit post-contractual opportunistic behavior is a speedy judicial system that enforces contracts swiftly. This shows that judiciaries should affect the economic performance of contract-intensive activities. I will test this implication by examining investment by farmers, a section of society likely to be affected by inefficient judiciaries as they lack extra-legal bargaining power.

3.4 Methods and Results

This section will relate both amendments to the Code of Civil Procedure and conflicting decisions to judicial functioning. I expect "Court red tape" amendments (which modify procedures to be followed by the courts), the "speed" and "implicit speed" amendments (which are likely to affect proceeding duration but not purposefully enacted to solve the pendency problem)[15] to be related to the expected duration of a trial in High Court. I also expect the "violation of a precedent established by the same High Court" (a High Court decision violating an earlier decision by the same High Court because of ambiguity in the Code of Civil Procedure) to have an effect on this expected duration of a trial in High Court. It is noteworthy that this section is in fact the first stage of an Instrumental Variable estimation of the impact of the judiciary on economic activity. In the next section I will relate judicial functioning to economic activity using these amendments and conflicting decisions as Instrumental Variables.

In this section, the outcome of interest is the expected duration of a trial in High Court ($duration_{it}$). It is equal to the number of pending cases plus the number of filed cases within the year divided by the number of cases disposed of within the year. This duration is measured in years. Figure 3.6 shows the graph of this variable in 25 states between 1971 and 1996. To relate amendments of the Code of Civil Procedure ($amendments_{it}$) and "violation of a precedent established by the same High Court" ($violation_{it}$) to the expected duration of a trial in High Court, I perform regressions of the form:

$$duration_{it} = \alpha_i + \beta_t + \gamma amendments_{it} + \delta violation_{it} + \theta x_{it} + u_{it} \qquad (3.1)$$

where i corresponds to a state, t to time. α_i are state fixed effects, β_t time fixed effects. x_{it} are control variables. These x_{it} will include incrementally the ratio of dismissed appeals

[15] I do not consider "explicit speed" amendments as they are purposefully designed to reduce delays and are therefore responsive to the judiciary's conditions at the time.

to total appeals from the respective high court. This variable determines the probability that a High Court decides correctly. The underlying assumption here is that the Supreme Court is not biased and it is not subject to errors, and that the majority of the cases are appealed. This is therefore a measure of the quality of courts and an important variable to take into account in order to isolate the impact of ambiguity in the Code of Civil Procedure with $violation_{it}$ and not only the impact of court quality. I also include political political controls: the proportion of seats won by Congress parties, hard left parties, soft left parties and Bharatiya Janta parties interacted with a dummy indicating when Legislative Assemblies are likely to influence judicial process[16]. I then include the proportion of seats reserved to Scheduled Castes/Scheduled Tribes in State Legislative Assemblies interacted with a dummy indicating when Legislative Assemblies are likely to influence judicial process and the proportion of Scheduled Castes/Scheduled Tribes in the population according to censuses, according to the reasoning developed in the theoretical section above. I include the number of Panchayats per million capita in the State to account for alternative dispute resolution mechanisms as well as the proportion of total revenue expenditure spent on Organs of State lagged for two years to account for the budget devoted to judicial functioning. u_{it} is a disturbance term. As Figure 3.6 shows, the expected duration of trials is increasing over time in each and every state. To deal with this problem of autocorrelation, I cluster the standard errors by State (Bertrand et al, 2002)[17]. State fixed effects capture time-constant State-specific factors such as culture and geography. Year effects capture common shocks such as the central amendments to the Code of Civil Procedure that took place in 1976 (and in 1999 and 2002, though the latter two are not included in the observation sample from 1971 to 1996) as well as other centrally implemented policies. The coefficients of interest are γ and δ.

[16] I also tried with the level terms not interacted with the dummy.

[17] I have also tried to include state-specific time trends. The results do not vary. I present the results with the standard errors clustered as this has been demonstrated in Bertrand et al (2002) as a better way to deal with serial correlation.

Table 3.2 relates Civil Procedure Code amendments and conflicting judicial decisions to expected durations of High Court trials. In Column (1), the dependent variable is $duration_{it}$. The only explanatory variables are "Court red tape" amendments and the "violation of a precedent established by the same High Court" variable. State fixed effects and year fixed effects are included. One extra "Court red tape" amendment increases the expected duration of a trial in High Court by 3.3 days. This coefficient is statistically significant. It confirms the intuition that adding or complicating Court procedures increases delays. One extra violation of a precedent established by the same High Court will increase the expected duration of a trial in High Court by 18.8 days. This coefficient is statistically significant. It confirms the intuition that judges must spend more time in choosing between conflicting views when the same High Court violates its own precedents. However, the "violation of a precedent established by the same High Court" variable could very well be correlated with the quality of judges. I therefore include the ratio of dismissed appeals in Column (2). I also add political controls following the theoretical section, which highlighted the fact that "Court red tape" amendments are perhaps responsive to political conditions. I measure a State's political inclination by the proportion of seats won in Legislative Assemblies by four different party groupings: the Congress Party (Indian National Congress, Indian Congress Socialist, Indian National Congress Urs), a hard left grouping (Communist Party of India, Communist Party of India Marxist), a soft left grouping (Socialist Party, Praja Socialist Party), and Bhartiya Janata Party. I further interact these variables with an all-India dummy taking a value 1 when I expect some political interference, such as during the Emergency Regime of 1975-77 and the years 1981-93, when the First Judges' case was taking place (as described in Figure 3.5)[18]. The coefficients are very similar in Column (2). Another hypothesis is that increased representation of Scheduled Castes/Scheduled Tribes in Legislative Assemblies affects judicial quality as Scheduled Castes/Scheduled Tribes push for

[18]I also included level terms, not interacted with the dummy, and the results were again similar.

reforms disproportionately favouring their groups of origin. I included in Column (3) the proportion of seats reserved for Scheduled Castes/Scheduled Tribes in State Legislative Assemblies interacted with a dummy indicating when the former are likely to influence the judicial process and the proportion of Scheduled Castes/Scheduled Tribes in the population according censuses following Pande's (2003) methodology. The coefficients are again very similar. In Column (4), I also include the number of Panchayats per million capita in the State to account for alternative dispute resolution mechanisms. In fact, it is often claimed that judicial systems have only limited impact on economies because people resort to alternative dispute resolution institutions, particularly to informal ones. Koehling (2002) describes one such informal Indian institution: the Panchayats. They play a crucial role in settling and avoiding rural disputes. Panchayats, with their limited judicial authority, are used to settle disputes about land usage, tenure and commons. As locally-bound institutions, they are highly efficient since they are familiar with village situations and litigants. As a result, their level of acceptance among the population is high. In cases of dispute resolutions, Panchayats can impose very limited sanctions, but the social pressure created by judgements serves as strong incentives to comply with judgements. I also include in Column (4) the proportion of total revenue expenditure spent on the Organs of State[19] lagged two years in order to account for budgets devoted to judicial functioning. The coefficients remain similar. Other types of amendments could potentially affect the expected duration of a trial in High Court. In Column (5), I include "speed" amendments. The latter is a cumulative variable increased by 1 after any amendment likely to have an impact on the speed of the courts is passed. This variable includes explicit speed, court red tape, defendant red tape, judgement-debtor, demand-side solution, plaintiff red tape, and certainty amendments. There is no effect of this variable on the expected duration of a trial in High Court. In Column (6), I include "implicit speed" amendments. This variable is the difference between speed amendments

[19]This measure is not perfect as it encompasses the State budget for Executive and Legislative branches.

and explicit speed amendments. I subtract "explicit speed" amendments because these amendments are clearly responsive to judicial conditions and are therefore endogenous to the expected duration of a case in trial. I do not argue that "Court red tape" amendments are any less endogenous, but at least they are not explicitly designed to reduce delays. Column (6) shows no significant impact of "implicit speed" amendments. I also included separately or together every different type of amendment and consistently found that only "Court red tape" amendments and "violation of a precedent established by the same High Court" were significant[20]. Column (4) is the preferred specification because it includes only significant amendments affecting duration and the most complete set of controls. It is interesting to note that the F-value of the F-test of the joint significance of "Court red tape" amendments and "violation of a precedent established by the same High Court" is 8.06 significant at 5 percent. This means that "Court red tape" amendments and "violation of a precedent established by the same High Court" affect significantly the expected duration of a trial in High Court.

To conclude this section, I found in the panel data analysis that "Court red tape" amendments and "violation of a precedent established by the same High Court" were significant determinants of the expected duration of High Court trials. This confirms the intuition presented in the theoretical section. It is still possible to say, following Besley and Case (2000), that time-varying State level amendments can be studied as either left or right hand side variables. These amendments are possibly responsive to economic, political or judicial conditions within the State. I address this concern in four ways.

First, I account for this matter in selecting amendments by considering only "Court red tape" or "implicit speed" amendments. "Explicit speed" amendments are clearly enacted in places suffering from slow judiciaries (replacing "Court red tape" amendments with "explicit speed" amendments in Table 3.2 produces an insignificant result, consistent with the reverse causality hypothesis). I argue that "Court red tape" amendments are not

[20] results not presented for clarity.

explicitly related to speed. However, amendments whose primary aim is the improvement of procedure quality will have an indirect effect on speed. Second, I use a panel data analysis and include State fixed effects to account for permanent differences across States in policies and outcomes. If systematic determinants of amendments are time invariant characteristics, then this will remove concerns about endogeneity. Third, I try to account for forces leading to amendments enactment. As we saw in the theory section, the judiciary has not been free from political interference. I include variables measuring political inclination of States in these regressions. Fourth, this concern is less valid for "violation of a precedent established by the same High Court". In fact, the occurrence of conflicting decisions is related to the occurrence of a certain case involving ambiguous sections of the Code of Civil Procedure[21]. This variable is therefore less related to political, economic, judicial conditions of the time.

Having found the sources of variation in judicial speed, I am now able to relate it to economic performance, particularly to the functioning of credit markets, registered manufacturing and trade sector performance.

3.5 The impact of the judiciary on economic outcomes

This section relates the expected duration of High Court trials to economic activity. I use the following regressions:

$$e_{it} = \epsilon_i + \eta_t + \lambda duration_{it} + \rho x_{it} + \mu_{it} \tag{3.2}$$

[21] In the earlier example, the 'violation of a precedent established by the same High Court' variable takes the value 1 in 1984 in West Bengal because of a death of one party in a case in 1984, which is independent from the judicial conditions at the time and the subsequent necessity to use Orders 22 and 23 of the Code of Civil Procedure.

where i corresponds to a State and t to time. e_{it} is an economic outcome of interest. I will first test Proposition 1, applied to the agricultural sector where issues of credit availability are more stringent, by using measures of agricultural credit supply and development. I will then test Proposition 2 by using measures of the development of registered manufacturing, unregistered manufacturing, trade, hotel and restaurants, banking and insurance, real estate sectors development and ultimately, poverty. ϵ_i are State fixed effects and η_t are time fixed effects. x_{it} are control variables. I use the exact same control variables used in Table 3.2. μ_{it} is a disturbance term. Standard errors are clustered by State to take into account concerns over serial correlation (Bertrand et al, 2002). State fixed effects capture State-specific factors such as culture and geography. Year effects capture common shocks such as central amendments to the Code of Civil Procedure as well as other centrally implemented policies. The coefficient of interest is λ.

There can clearly be some endogeneity between the efficiency of a particular institution and the economic performance of a particular State. The first issue is one of reverse causality: States with higher per capita incomes are able to devote more funds to improving institutions and thus have better institutions. The second issue is one of unobservable omitted variables, which are behind both judicial and economic outcomes, such as pessimism regarding a particular State's prospects or the "backwardness" of another. This is why two instrumental variables are employed for the expected duration of High Court trials: "Court red tape" amendments and "violation of a precedent established by the same High Court". A good instrumental variable is a variable correlated with the expected duration of a trial in High Court, exogenous (that is, not correlated with μ_{it}) and not an explanatory variable in itself. The previous section demonstrated that "Court red tape" amendments and "violation of a precedent established by the same High Court" were significantly related to the expected duration of High Court trials. In Table 3.2, Column (4), the F-test of the joint significance of the two instruments is

8.06. I make no claim that these two instruments are exogenous. I consider only those "less" endogenous amendments such as "Court red tape" amendments in lieu of "explicit speed" amendments. I also consider "violation of a precedent established by the same High Court" with some arbitrary temporal variation as emphasized earlier. This variable is one which lists all precedent violations established by the same High Court. In the particular example given above, this variable takes value 1 in 1984 in West Bengal because of the death of one party in a case, which is largely random, and the subsequent necessity to use Orders 22 and 23 of the Code of Civil Procedure. The temporal variation in the "conflicting" variable is not endogenous to economic, political or judicial conditions; it arises from the occurrence of cases pertaining to ambiguous sections of the Code of Civil Procedure. Following Besley and Case (2000), I also account for forces that may lead to the enactment of these amendments. Additionally, I present Hausman's results as well as over identification tests.

Table 3.3 examines the relationship between High Court trial duration and credit supply to agricultural sectors. For reasons highlighted in the theoretical section, I expect credit availability to be reduced in regions with slower judiciaries. I expect this problem to be more stringent for borrowers with less collateral, typically farmers. Column (1) shows an OLS regression of real per capita agricultural bank finance on the expected duration of a High Court trial. The result is insignificant. Column (2) presents a reduced form version of the impact of "Court red tape" amendments and "violation of a precedent established by the same High Court" on real per capita agricultural bank finance. This confirms the fact that these two variables have an impact on real per capita agricultural bank finance. One extra "violation of a precedent established by the same High Court" decreases real per capita agricultural bank finance by 6 percent, while one extra "Court red tape" amendment decreases it by 0.6 percent. This is consistent with the hypothesis that "violation of a precedent established by the same High Court" and "Court red tape" amendments increase the expected duration of High Court trials, which,

in turn, discourages creditors from offering credit, since they know it will be harder to recover defaulted loans. It is possible to present some instrumental variable evidence. Column (3) instruments the expected duration of a trial in High Court with "violation of a precedent established by the same High Court" and "Court red tape" amendments. The coefficient of duration is now negative and significantly different from 0. For example, an extra 18.8 days in the expected duration of a trial in High Court[22] decreases real per capita agricultural bank finance by 6 percent. The fact that the instrumented coefficient is now statistically different from 0 as opposed to the OLS case may arise because of two reasons: simultaneity or unobserved State heterogeneity. Expected duration of a trial could affect negatively economic performance. In turn, economic performance can affect negatively the speed of the judiciary as contract intensive activities requiring third party adjudication develop (if funds devoted to its improvement are constant in absolute terms). As far as unobserved State heterogeneity is concerned, suppose that in a particular State citizens are especially fastidious, displaying meticulous attention to detail. They will thus be more litigious and file more cases since they are excessively sensitive to even the slightest deviation in the terms of a contract. This will increase the expected duration of a trial in High Court. On the other hand, economic performance will increase thanks to the citizenry's careful attention to detail. This unobserved variable, if omitted, will bias upward the coefficient between duration and economic performance. If the instrumental variables are appropriate, then this bias should be removed. This may be why I find a significantly negative coefficient in Column (3) as opposed to Column (1). The over-identification test in Column (3) is a test of joint significance of both instruments in a regression of the fitted residuals from the second-stage on these instruments (and all exogenous variables). The instruments are not significantly different from 0 and pass the over-identification test. This confirms the fact that these two instruments are appropriate in this analysis. The over identification is often criticized because of its low

[22]This was the increase implied by an extra "violation of a precedent established by the same High Court"

power. I repeat the analysis using "violation of a precedent established by the same High Court", "Court red tape" amendments, as well as "explicit speed" amendments, which are clearly endogenous. The over identification test is now negative, in the sense that these instruments are detected to be endogenous. This reinforces the statement that the two instrumental variables used are appropriate. The Hausman [1978] test tests the equality of the coefficients between OLS (efficient and consistent under H0 only) and IV (always consistent). The χ^2 is significantly different from 0. This means that there is a systematic difference between OLS and IV. It is appropriate to instrument duration with "violation of a precedent established by the same High Court" and "Court red tape" amendments. This first result is confirmed in Columns (5) and (7). An increase of 18.8 days in the expected duration of a High Court trial decreases the account number of commercial bank advances to agriculture per capita by 3.3 percent and real per capita regional rural bank credit by 6.4 percent.

It is especially interesting to look at the difference between the OLS and IV coefficients. In Columns (3), (5) and (7), the IV coefficient seems seven times bigger in absolute terms than the OLS coefficients in corresponding columns (1), (4) and (6). This is consistent with a simultaneity bias more than with an unobserved State heterogeneity bias. Indeed, the unobserved State heterogeneity bias does not depend on the dependent variable used, as opposed to the simultaneity bias.

This reduced credit availability impedes agricultural development. Table 3.4 examines the relationship between the expected duration of a trial in High Court and agricultural development. Column (2) shows that an increase of 18.8 days in the expected duration of a trial in High Court decreases by 1.7 percentage points the ratio of irrigated agricultural land. As a result, agricultural performance is impeded by a weak judiciary. An increase of 18.8 days in the expected duration of a trial in High Court decreases per capita State agricultural domestic product by 0.6 percent in column (4). I use the rural head count index (in percentage) as the dependent variable in Column (6) to measure the impact of

the judiciary on poverty. The latter shows that an increase of 18.8 days in the expected duration of a trial in High Court increases the rural head count index by 1.9 percentage points. The over identification tests using "violation of a precedent established by the same High Court" and "Court red tape" amendments are always conclusive. Adding "explicit speed" amendments, which are clearly endogenous, leads to rejection by the overid tests. The bias between columns (1), (3), (5) and (2), (4), (6) indicate that simultaneity bias is more important than the unobserved state heterogeneity bias.

These results seem to indicate that the judiciary plays a considerable role in the economic outcomes of India's States. I found that farmers have less access to credit markets. As a result, agricultural development is impeded. The judiciary impacts the weaker sections of the country, such as the poor and farmers.

3.6 Conclusion

Amendments to the Code of Civil Procedure that add or complicate procedures to be followed by the Court affect expected durations of High Court trials. I have addressed the issue of the endogeneity of temporal and spatial variation in the enactment of these amendments in three ways. First, I showed that these amendments are not purposefully designed to reduce Court delays, in contrast to "explicit speed" amendments, which explicitly favour expeditious justice and are thus clearly responsive to the judicial conditions of the time. Second, I used a panel data analysis and included State fixed effects that capture time invariant differences across States in policies and outcomes. Third, I accounted for factors that may have influenced the enactment of these amendments by Courts: the political environment during periods of Executive interference in judicial affairs as well as representation of Scheduled Castes/Tribes in Legislative Assemblies.

Similarly, the ambiguity of the Code of Civil Procedure, measured by the violation of precedents established by the same High Court, affects expected durations of High Court trials. This is because judges must spend time choosing between conflicting views after

such events. The interesting feature of this variable is the temporal arbitrary occurrence of cases referring to ambiguous sections of the Code of Civil Procedure. In contrast to the amendments strategy followed earlier, the temporal variation in this variable is not endogenous to economic, political or judicial conditions. It arises only from the occurrence of cases pertaining to ambiguous sections of the Code of Civil Procedure. On the other hand, the spatial variation of this variable may be correlated with the quality of courts. I have sought to account for the quality of Courts in order to disentangle these two effects.

Finally, I related expected durations of High Court trials to economic outcomes. I used these "Court red tape" amendments and "violation of a precedent established by the same High Court" as instruments for the expected duration of a case in trial. I showed that these two instruments are significantly related to duration. They represent a spatial and temporal source of variation in trial duration. As such, they may be used as instruments. I found that the judiciary heavily shapes the economic outcomes of India's States and that farmers have less access to credit markets. As a result, agricultural development is impeded. Judiciaries impact weaker sections of the country, such as the poor and farmers.

This paper has shown that the expected duration of High Court trials is a significant determinant of credit markets and agricultural performance. The policy implications are clear. To reduce expected durations of High Court trials, the number and complexity of procedures to be followed by the Courts must be reduced. Alternatively, the Code of Civil Procedure's ambiguity must be reduced by simplifying and clarifying confusing and redundant rules. The recommendations of India's Ex-Chief Justice K.N. Singh in the 144th Law Commission Report entitled "Conflicting Judicial Decisions Pertaining to the Code of Civil Procedure, 1908" should be followed. They have yet to be incorporated into the Civil Procedure Code. Clarifying each ambiguous rule will allow judges to save time by liberating them from having to deliberate over so many conflicting views.

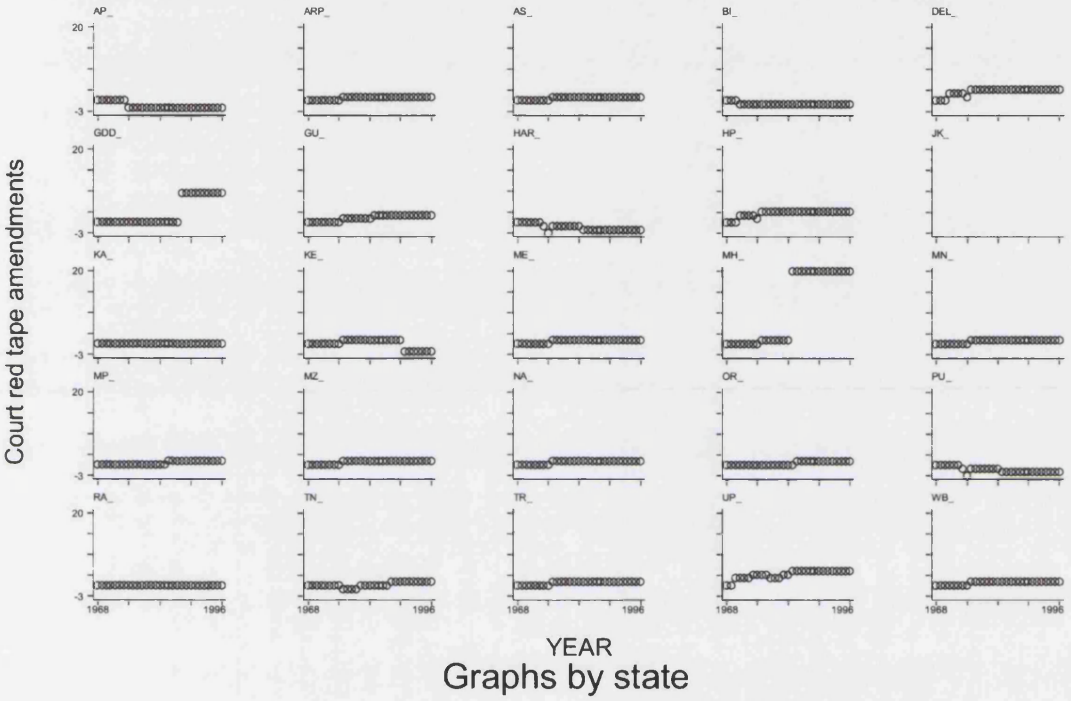

Figure 3-1: Cumulative index of the "Court red tape" amendments per state between 1968 and 1996

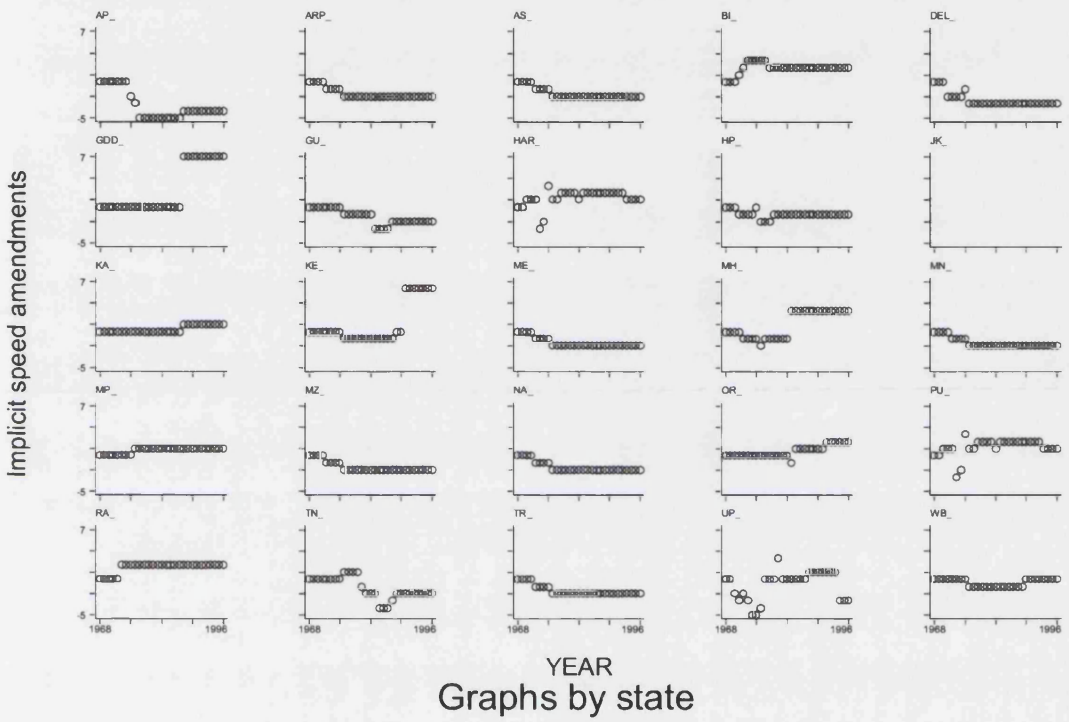

Figure 3-2: Cumulative index of the "implicit speed" amendments per state between 1968 and 1996

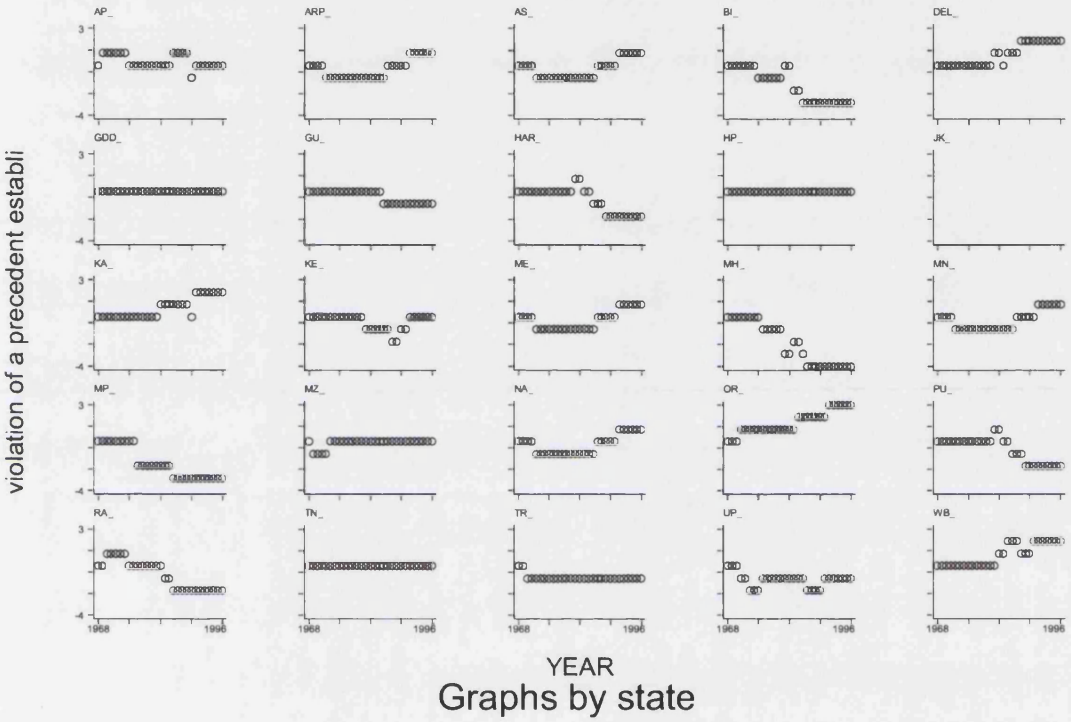

Figure 3-3: Cumulative index of the "Violation of a precedent established by another High Court" per state between 1968 and 1996

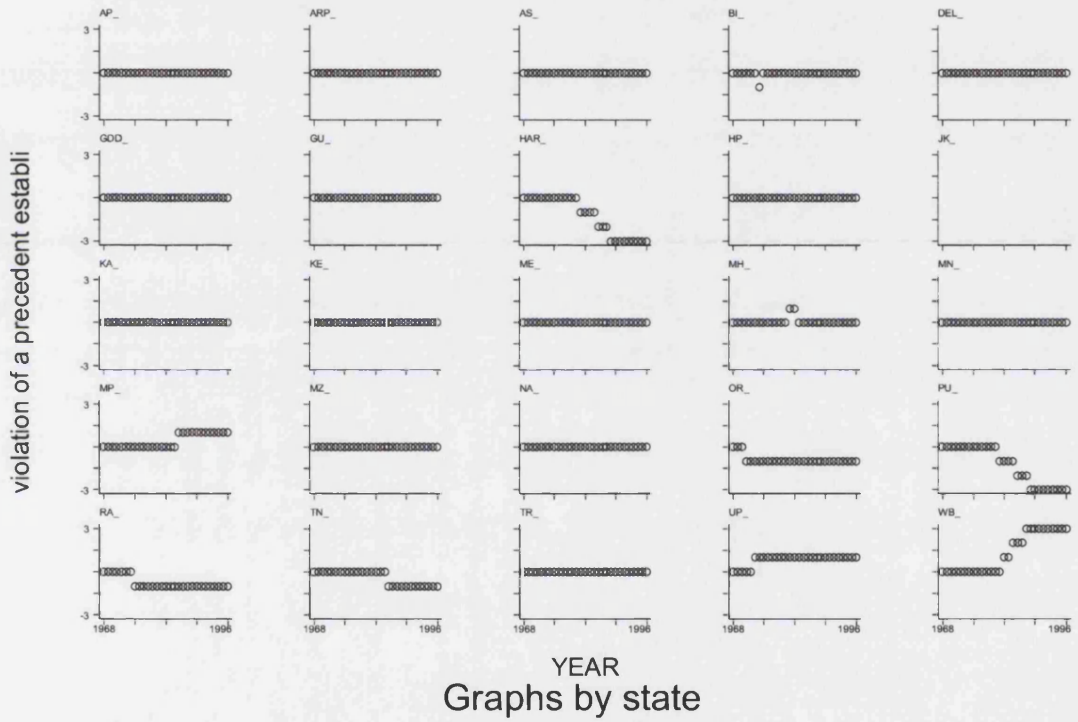

Figure 3-4: Cumulative index of the "Violation of a precedent established by the same High Court" per state between 1968 and 1996

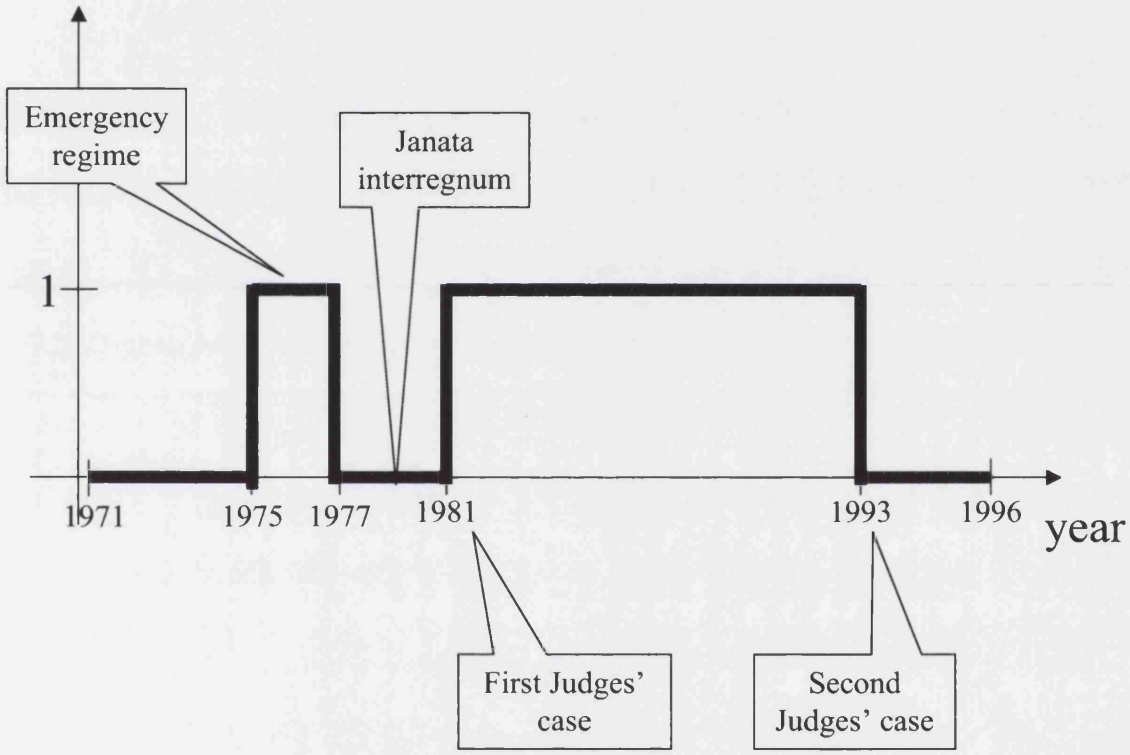

Figure 3-5: Dummy Variable indicating the likelihood of political interference with the judiciary in time

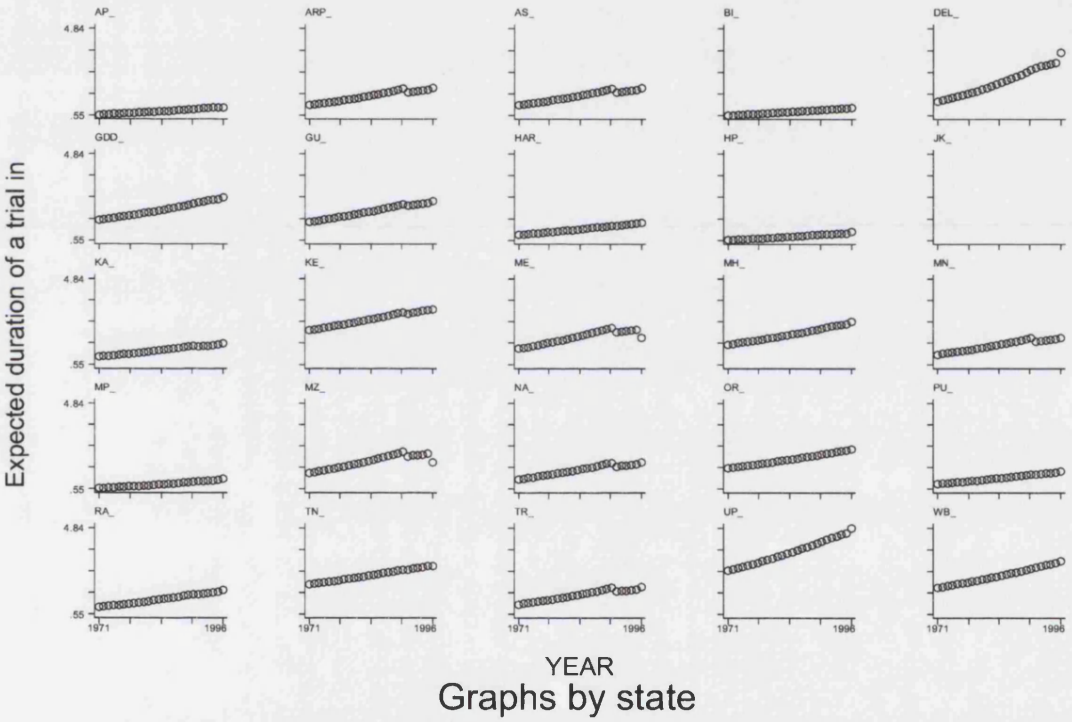

Figure 3-6: Expected duration of a trial in High Court

Table 3.1: descriptive statistics of the amendments

		(1)	(2)	(3)
Type of amendment	Definition	No. of amendments	overall sum weighted by the direction of the amendment	ratio weighted sum/number of amendments
"explicit speed"	is it explicitely written that the amendment is made for expeditious justice?	50	+24	0.48
mention of court power to extend limits	does that leave the possibility to the court to set the time limits?=reforms defeated by courts	42	+34	0.81
"court red tape"	more red tape for the court?	94	+36	0.383
"speed"	does this amendments increase speed in any way?	288	+4	0.014
"defendant red tape"	more red tape for the defendant?	34	+24	0.71
"poor"	explicitely pro-poor?	50	+17	0.3
"agricultural"	explicitely pro-agricultural?	22	+18	0.8
"business"	explicitely mentioned pro-business?	33	-1	-0.03
"government"	explicitely pro-government?	34	+26	0.8
"judgement-debtor"	explicitely pro-judgement debtor?	149	+31	0.208
"demand-side solution"	will that decrease demand for justice?=less incentive to file a complaint?	47	+19	0.404
"plaintiff red tape"	does that constitute more red tape for the plaintiff?	35	+2	0.714
"certainty"	does that increase certainty of the outcome	32	+10	0.313

Table 3.2: Impact of conflicting judicial decisions and court red tape amendments on the expected duration of a trial in High Court

	(1)	(2)	(3)	(4)	(5)	(6)
	expected duration of a trial in High Court					
violation of a precedent established	0.051489	0.049651	0.052168	0.019746	0.020617	0.020084
by the same High Court	(3.09)***	(2.68)**	(1.98)*	(2.12)*	(2.13)*	(2.14)*
Court red tape amendments	0.009263	0.010129	0.012678	0.008851	0.006098	0.009820
	(2.04)*	(2.03)*	(2.41)**	(3.09)***	(1.98)*	(2.13)*
Ratio of dismissed appeals		0.001056	-0.001171	-0.001830	-0.001520	-0.001785
		(0.44)	(1.03)	(1.88)*	(1.90)*	(1.87)*
Political controls (interacted)	no	yes	yes	yes	yes	yes
Sc/st seats (interacted)	no	no	yes	yes	yes	yes
Panchayats				-0.000758	-0.000740	-0.000753
				(1.73)	(1.84)*	(1.73)
Exp. Org. Of state (-2)				0.004945	0.004693	0.004938
				(0.70)	(0.70)	(0.70)
Speed amendments					0.016366	
					(1.74)	
Implicit speed amendments						0.003631
						(0.37)
State fixed effects	yes	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes
F-test of the joint significance of	9.03	7.19	3.47	8.06	4.76	4.53
violation and court red tape (p-value)	(0.001)	(0.003)	(0.059)	(0.04)	(0.03)	(0.03)
Observations	624	489	330	279	279	279
R-squared	0.97	0.97	0.99	0.99	0.99	0.99

Robust t statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. • The dependent variable is the expected duration of a case in High Court, measured in number of pending cases plus number of filed cases within the year divided by the number of cases disposed of within the year (unit=years) • violation of a precedent established by the same High Court is a cumulative variable increased by 1 forever after a High Court violated its own precedent. • Court red tape amendments is a cumulative variable increased by 1 forever after an amendments that add procedures to the court is enacted. • Ratio of dismissed appeals is the ratio of dismissed appeals to total appeals from the respective high court (percentage). Political controls (interacted) means the proportion of seats won by Congress parties, hard left parties, soft left parties and Bharatiya Janta parties interacted with a dummy indicating when the legislative assemblies are likely to influence the judicial process. Sc/St seats (interacted) includes the proportion of seats reserved to Scheduled Castes/Scheduled Tribes in state legislative assemblies interacted with a dummy indicating when the legislative assemblies are likely to influence the judicial process and the proportion of Scheduled Castes/Scheduled Tribes in the population according to censuses. Panchayats means the number of Panchayats per million capita in the state. Exp Org. of State (-2) means the proportion of total revenue expenditure spent on the Organs of State lagged two years. Speed amendments is a cumulative variable increased by 1 after any amendment likely to have an impact on the speed of the courts is passed (includes explicit speed, court red tape, defendant red tape, judgement-debtor, demand-side solution, plaintiff red tape, certainty amendments). Implicit speed amendments is the difference between speed amendments and explicit speed amendments. • the F-test is a test of joint significance of the two instruments: violation of the precedents established by the same High Court and court red tape amendments. the p-value is presented in parentheses.

Table 3.3: Impact of the expected duration of a trial in High Court on agricultural credit availability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	real per capita agricultural bank finance			number of account of commercial bank advances to agriculture per capita		real per capita regional rural bank credit	
Model	OLS	OLS	IV	OLS	IV	OLS	IV
duration	-32.734788		-216.993629	-7.083866	-47.512413	-8.313900	-43.649922
	(1.49)		(2.98)***	(0.98)	(3.61)***	(1.29)	(2.69)**
violation of a precedent established		-10.999666					
by the same High Court		(3.29)***					
Court red tape amendments		-1.143195					
		(4.26)***					
Ratio of dismissed appeals	-0.041734	0.056338	-0.335468	0.032787	-0.031661	-0.061114	-0.110393
	(0.50)	(0.68)	(1.22)	(1.09)	(0.47)	(2.44)**	(2.80)**
Panchayats	0.005252	0.006108	-0.139389	0.003744	-0.027992	0.001121	-0.024664
	(0.16)	(0.30)	(1.25)	(0.34)	(1.10)	(0.16)	(1.12)
Exp. Org. Of state (-2)	-0.478392	-0.185783	0.715022	-0.083877	0.177972	0.031209	0.285049
	(1.21)	(0.82)	(0.43)	(0.61)	(0.44)	(0.31)	(0.85)
Political controls (interacted)	yes	yes	yes	yes	yes	yes	yes
Sc/st seats (interacted)	yes	yes	yes	yes	yes	yes	yes
Overid test (p-value of F-test)			0.13		0.24		0.41
Overid test (with explicit speed amendments)			0.06		0.08		0.04
Hausman test (p-value of chi2)			132.5(0.00)		23.07(0.68)		61.77(0.00)
Observations	264	264	264	264	264	248	248
R-squared	0.90	0.92	0.77	0.91	0.87	0.89	0.77

Robust t statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. • In columns 1, 2, 3, the dependent variable is the real per capita agricultural bank finance (total). In column 2, a reduced form specification is presented, including the two variables (conflicting judicial decisions and court red tape amendments) found to have an influence on the duration of a case in Table 2. • Ratio of dismissed appeals is the ratio of dismissed appeals to total appeals from the respective high court (percentage). Panchayats means the number of Panchayats per million capita in the state. Exp Org. of State (-2) means the proportion of total revenue expenditure spent on the Organs of State lagged two years. Political controls (interacted) means the proportion of seats won by Congress parties, hard left parties, soft left parties and BJP parties interacted with a dummy indicating when the legislative assemblies are likely to influence the judicial process. Sc/St seats (interacted) includes the proportion of seats reserved to Scheduled Castes/Scheduled Tribes in state legislative assemblies interacted with a dummy indicating when the legislative assemblies are likely to influence the judicial process and the proportion of Scheduled Castes/Scheduled Tribes in the population according to censuses. In columns 3, 5, 7, duration is instrumented with violation of a precedent established by the same high court and court red tape amendments.• The overid test in columns 3, 5, 7 is a test of joint significance of both instruments in a regression of the fitted residuals from the second-stage on these instruments.• The second overid test in columns 3, 5, 7 is a test of joint significance of both instruments and "explicit speed" amendments in a regression of the fitted residuals from the second-stage on these instruments. This flasification exercise, using purposefully wrong (endogenous) instruments, demonstrates the power of the overid test.• The Hausman test is a test of the equality of coefficients between OLS and IV. Under H0, OLS and IV are consistent and the coefficients should be equal. The chi2 value and the p-value of

Table 3.4: Impact of the expected duration of a trial in High Court on agricultural development and poverty

	(1)	(2)	(3)	(4)	(5)	(6)
	Percentage of Irrigated Agricultural Land		per capita state agric dom prod, all sector '00000Rs		rural head count index (percentage)	
Model	OLS	IV	OLS	IV	OLS	IV
duration	-7.459192	-32.944503	0.028560	-0.494391	-4.819344	36.635377
	(1.23)	(3.11)***	(0.40)	(2.42)**	(1.18)	(3.43)***
Ratio of dismissed appeals	-0.061733	-0.101188	0.000456	-0.000354	0.037128	0.101307
	(2.48)**	(2.60)**	(0.49)	(0.30)	(1.51)	(2.21)**
Panchayats	-0.014478	-0.034870	0.000133	-0.000286	-0.016135	0.017035
	(1.31)	(1.80)*	(0.77)	(0.73)	(1.80)*	(1)
Exp. Org. Of state (-2)	0.041948	0.214765	0.000447	0.003993	0.124593	-0.156514
	(0.38)	(0.81)	(0.26)	(0.78)	(1.45)	(0.56)
Political controls (interacted)	yes	yes	yes	yes	yes	yes
Sc/st seats (interacted)	yes	yes	yes	yes	yes	yes
Overid test (p-value of F-test)		0.16		0.99		0.99
Overid test (with explicit speed amendments)		0.28		0.04		0.001
Hausman test (p-value of chi2)		1.06(1.00)		191.77(0.00)		788.90(0.00)
Observations	279	279	279	279	279	279
R-squared	0.98	0.98	0.98	0.97	0.94	0.87

Robust t statistics in parentheses, clustered at the level of the state. * significant at 10%; ** significant at 5%; *** significant at 1%. • Ratio of dismissed appeals is the ratio of dismissed appeals to total appeals from the respective high court (percentage). Panchayats means the number of Panchayats per million capita in the state. Exp Org. of State (-2) means the proportion of total revenue expenditure spent on the Organs of State lagged two years. Political controls (interacted) means the proportion of seats won by Congress parties, hard left parties, soft left parties and BJP parties interacted with a dummy indicating when the legislative assemblies are likely to influence the judicial process. Sc/St seats (interacted) includes the proportion of seats reserved to Scheduled Castes/Scheduled Tribes in state legislative assemblies interacted with a dummy indicating when the legislative assemblies are likely to influence the judicial process and the proportion of Scheduled Castes/Scheduled Tribes in the population according to censuses. In columns 2, 4, 6, duration is instrumented with violation of a precedent established by the same high court and court red tape amendments.• The overid test in columns 2, 4, 6 is a test of joint significance of both instruments in a regression of the fitted residuals from the second-stage on these instruments.• The second overid test in columns 2, 4, 6 is a test of joint significance of both instruments and "explicit speed" amendments in a regression of the fitted residuals from the second-stage on these instruments. This flasification exercise, using purposefully wrong (endogenous) instruments, demonstrates the power of the overid test.• The Hausman test is a test of the equality of coefficients between OLS and IV. Under H0, OLS and IV are consistent and the coefficients should be equal. The chi2 value and the p-value of the chi2 is presented.

Data Appendix 1: examples of other amendments

	original rule	amendment	codification
"poor"	Order 33-Suits by Indigent Persons, Rule 2 specifies that the High Court may make rules providing for the mode of selecting pleaders to be assigned and the facilities to be provided to such pleaders by the Court.	The Haryana High Court rules enacted in 1981 are the following: the pleader has to have at least 5 years of experience; the system is based on willingness by the pleader; if pleader does not accept to plead free of charge, he will be paid on the state budget for a maximum of 300Rs; the legal aid has 7 days to prepare; additional bonuses of up to 150 Rs are available; the judge has a duty to convince competent senior lawyers to enlist themselves.	1 after 1981 for Haryana
"agricultural"	Order 21-Execution of Decrees and Orders, Rule 75(2): Special Provision relating to growing crops.- Where the crop from its nature does not admit of being stored, it may be sold before it is cut and gathered, and the purchaser shall be entitled to enter on the land, and to do all the necessary for the purpose of tending and cutting or gathering it.	Special Provision relating to growing crops.- Where the crop from its nature does not admit of being stored, or where it appears to the Court that the crop shall be sold to greater advantage in an unripe state, it may be sold before it is cut and gathered, and the purchaser shall be entitled to enter on the land, and to do all the necessary for the purpose of tending and cutting or gathering it.	1 after 1987 for Goa, Dadra and Nagar Haveli
"business"	additional Rule 5 of Order 15-Disposal of Suit at the First Hearing inserted in Uttar Pradesh in 1972: "Striking of defence on non-deposit of admitted rent.- In any suit by a lessor for the eviction of a lessee from any immovable property after the determination of his lease, and for the recovery from him of rent in respect of the period of occupation thereof during the continuance of the lease, [...], the defendant shall, at or before the first hearing of the suit, [...], deposit the entire amount of rent, or compensation for use and occupation, admitted by him to be due, and thereafter throughout the continuance of the suit, deposit regularly the amount of monthly rent,[...], and in the event of any default in this regard, the court may,[...], strike-off his defence."	"Striking of defence on non-deposit of admitted rent.- In any suit by a lessor for the eviction of a lessee from any immovable property after the determination of his lease, and for the recovery from him of rent in respect of the period of occupation thereof during the continuance of the lease, [...], the defendant shall, at or before the first hearing of the suit, [...], deposit the entire amount of rent together with interest thereon at the rate of 9% per annum, or compensation for use and occupation, admitted by him to be due, and thereafter throughout the continuance of the suit, deposit regularly the amount of monthly rent within a week,[...], and in the event of any default in this regard, the court may,[...], strike-off his defence."	1 after 1972, and another 1 after 1977 for Uttar Pradesh

Data Appendix 1 continued

"government"	Order 45-Appeals to the Supreme Court, Rule 7 specifies the security an appellant has to provide for the costs of the respondent and to defray the expenses of translating, transcribing, transmitting a copy of the whole suit to the Court.	Rule 7-A is added in the Gujarat High Court in 1983: "Security not to be demanded from Union or State Government or Government servant defended by Government. [...]"	1 after 1983 for Gujarat
"judgement-debtor"	Order 21-Execution of Decrees and Orders, Rule 40: "Proceedings on appearance of judgement-debtor in obedience to notice or after arrest.- (2) Pending the conclusion of the inquiry [...] the Court may, in its discretion, order the judgement-debtor to be detained in the custody of an officer of the Court or release him on his furnishing security to the satisfaction of the Court for his appearance when required."	"Proceedings on appearance of judgement-debtor in obedience to notice or after arrest.- (2) Pending the conclusion of the inquiry [...] the Court may, in its discretion, order the judgement-debtor to be detained in the custody of an officer of the Court on the decree-holder depositing in Court the necessary amounts payable to the judgement-debtor and the Officer of the Court in connection with such detention, or release him on his furnishing security to the satisfaction of the Court for his appearance when required."	1 after 1990 for Kerala
"demand-side solution"		Order 1-Parties to Suits, the new rule 3-B added in Madhya Pradesh in 1984: "Conditions for entertainment of suits.- No suit or proceeding for declaration of title or any right over any agricultural land, with or without any other relief or for specific performance of any contract for transfer of any agricultural land with or without any other relief shall be entertained by any Court, unless the plaintiff, knowing that a return under section 9 of the Madhya Pradesh Ceiling on Agricultural Holdings Act, 1960, [...] is required to be filed by him, has impleaded the State of Madhya Pradesh as on of the defendants [...]."	1 after 1984 for Madhya Pradesh
"plaintiff red tape"	Order 7-Plaint, Rule 9: "Procedure on admitting a plaint.- (1A)The plaintiff shall, within the time fixed by the Court [...], pay the requisite fee for the service of summons on the defendants."	"Procedure on admitting a plaint.- (1A)The plaintiff shall, within the time fixed by the Court [...], file summons in the prescribed form, in duplicate, after being dully filled in, for each of the defendants and pay the requisite fee for the service of summons on the defendants."	1 after 1982 for Punjab and Haryana
"certainty"	Order 21-Execution of Decrees and Orders, Rule 69: "Adjournment or stoppage of sale.- The Court may, in its discretion, adjourn any sale hereunder to a specified day and hour, and the officer conducting any such sale may in his discretion adjourn the sale, recording his reasons for such adjournment, [...]."	Adjournment or stoppage of sale.- The Court may, in its discretion, adjourn any sale hereunder to a specified day and hour, and the officer conducting any such sale may in his discretion adjourn the sale to a specified day and hour, recording his reasons for such adjournment, [...].	1 after 1983 for Maharashtra

Data appendix 2: History of the amendments to the Code of Civil Procedure in Allahabad (selected amendments)

page	order	rule	year	synopsis	implicit speed	explicit speed	speed court	court red tape	defendant red tape
81	3-Recognised Agents and Pleaders	4-Appointment of a pleader	1994	appointment of a pleader in force until all proceedings ended (more proceedings added in this amendment, e.g. a proceeding for revision of an order in the suit, proceedings for transfer) (=more quality)					
81	3-Recognised Agents and Pleaders	4-Appointment of a pleader	1994	the pleader cannot plead if he doesn't have a memorandum signed by him that he has instructions from his client to appear, act or plead (=less speedy but better quality)	-1				1
86	4-Institution of Suits	1-Suits to be commenced by plaint	1926	the plaint has to be given with a copy of the service with the summons. The court can grant time for that.	-1				
88	5-Issue and Service of Summons	2-Copy of plaint annexed to summons	1926	the defendant cannot be permitted to replace the plaint by a concise statement.	-1				1
89	5-Issue and Service of Summons	4-No party to be ordered to appear in person unless resident with certain limits	1926	the court can dispense with the service of any defendant who did not appear	1				
92	5-Issue and Service of Summons	9A-Summons given to the plaintiff for service	1958	the court must send the summons to the defendant by post to his adress (as well as to him personnally) (=more red tape)				1	
97	5-Issue and Service of Summons	21-Service of summons where defendant resides within jurisdiction of another court	1967	if defendant resides in jurisdiction of other court, can send the summon by post. If not returned, considered received. (=less red tape)	1			1	
99	5-Issue and Service of Summons	21-Service where defendant resides out of India and has no agent	1999	the only way to summon a defendant is by post as opposed to all the new ways of communication: fax, email accepted in 1999. (=therefore I put a -1 starting in 1999	-1				
100	5-Issue and Service of Summons	25A1-Service where defendant resides out of India and has an agent empowered to accept service of summons	1962	if the defendant has an agent, the summon can be sent to him	1				
122	7-Plaint	19-25	1970	make sure it is the right jurisdiction, dismiss the case if bad adress, post summons if defendant not present, party must inform the court if change of adress	-1			1	1
131	8-Written statement, set-off and counter-claim	11-12	1971	every party shall give its adress to the court	-1				1

Data Appendix 2 continued

page	order	rule	year	synopsis	implicit speed	explicit speed	speed court	court red tape	defendant red tape
189	19-Affidavits	1-15	1981	if one party is absent, an affidavit can be given to proceed (more fair but less speedy than simple dismissal of the case if one party not present)	-1				
194	20-Judgement and decree	7A-ormal order	1981	a party which wants to appeal can apply for a formal order (=memorandum of costs, adjudication...)				1	
248	21-Execution of decrees and orders	54-Attachement of immovable property	1983	attachement of immovable property (=impossibility to sell) is proclaimed at the date of the order (=can cancel a sell)					
292	25-Security of costs	1-When security of costs may be required from plaintiff	1983	minor change					
294	26-Commissions	1-Cases in which Court may issue commission to examine witness	1980	the court for speed reasons may issue a commission to interrogate witnesses. (note: commission: send somebody to interrogate a witness if the witness is far, sick...=good for speedy justice)		1	1		
294	26-Commissions	1-Cases in which Court may issue commission to examine witness	2002	cancelled by 1999 amendment (wef 2002)		-1	-1		
294	26-Commissions	3-Where witness resides within Court's jurisdiction	1980	a high court cannot issue commission, a court can say if it wants the commission to be returned to a subordinate court		1			
295	26-Commissions	4-Persons for whose examination commission may issue	1980	Omit Rule 4: a commision can be issued for somebody resident beyond the limits of the jurisdiction, or for a civil servant		-1	-1		
295	26-Commissions	4-Persons for whose examination commission may issue	1980	Omit Rule 4 (2): a court can say if it wants the commission to be returned to a subordinate court		-1			
295	26-Commissions	7-Return of commission with depositions of witnesses	1980	the evidence obtained in a commission is regarded as evidence, with or without the consent of the party against whom testimony is made. (more speedy, no exceptions to the evidence in a commission, even for person in the service of Government)	1				
357	37-Summary procedure	1-Courts and classes of suits to which the order is to apply	1975	other courts means district judges, civil judges, munsifs					
367	39-Temporary injunctions and interlocutory orders	3A-Court to dispose of application for injunction within 30 days	1981	rule of 1976 amendment omitted: the application of injunction shall be dealt with in 30 days.		-1			

Data Appendix 2 continued

page	order	rule	year	synopsis	implicit speed	explicit speed	speed court	court red tape	defendant red tape
374	41-Appeals from original decrees	1-Form of appeal. What to accompany memorandum	1994	that rule omitted: if appeal against a decree for money, such money must be deposited by the appelant (=less incentive to appeal)					
378	41-Appeals from original decrees	5-Stay by appelate Court	1994	that 1976 rule: the appelant has to give security for the court to make an order to stay the execution of the decree; is only for decree for payment of money. (+time limit fixed by court).			1		
382	41-Appeals from original decrees	14-Publication and service of notice of day for hearing appeal	1981	the amendment makes sure that the pleader is competent to receive the notice on the behalf of the defendant (maybe more speedy)	1				
387	41-Appeals from original decrees	22-Upon hearing respondent may object to decree as if he had preferred separate appeal	1994	adds ambiguity to the time allowed: is it hearing of the appeal or appearance in the appeal??	-1				
404	45-Appeals to the Supreme Court	3-Inquiry as to whether applicant is an indigent person	1987	exact same rule turned upside down					
419	48-Miscellaneous	10	1983	the adresses of the parties shall hold good during a review (=more certainty, more red tape court)				1	
446	Appendix B-Process	Form N. 1-A	1987	possibility to summon/notice for service by advertisement in a newspaper	1				

Data Appendix 3

Variable	Range	Source	Mean	St. Dev.
		Court data		
Expected duration of a trial in High Court	1971-1996	Law commission reports, Annual Report, Ministry of Law, Justice and Company Affairs and archives of the Supreme Court of India	1.7	0.77
		Control Variables		
Proportion of seats reserved for Scheduled Castes, Tribes in the legislative assemblies*	1971-1992	Election Commission document relating to election in a state	0.28502	0.14009
Proportion of Scheduled Castes, Tribes in the population	1971-1992	Census.	0.22029	0.08153
Proportion of Congress seats (Indian National Congress, Indian Congress Socialist, Indian National Congress Urs	1957-1990	"India decides: Elections 1952-1991", by Butler, Lahiri and Roy (1991).	0.46163	0.25201
Proportion of hard left seats (Communist Party of India + Communist Party of India Marxist)			0.07952	0.14119
Proportion of soft left seats (Socialist Party + Praja Socialist Party)			0.02475	0.04278
Proportion of Hindu parties (Bhartiya Janata Party + Bhartiya Jana Sangh)			0.1571	0.21055
Number of Panchayats per million capita	1971-1996	Central Statistical Organisation	325.47	319.096
Share of the State Expenditure for the Organs of State out of the total revenue expenditure	1972-1992	Public Finance Statistics, Ministry of Finance, Government of India	10.2634	10.1331
Ratio of dismissed appeals	1971-1996	Supreme Court Judgements, 2000 CDROM, ratio of dismissed appeals to toal appeals from the respective High Court.	55.42	15.0107

Data Appendix 3 continued

Economic Outcomes				
real per capita agricultural bank finance (total)	1971-1996	Statistical Tables relating to Banks in India, Reserve Bank of India	43.04	37.19
number of account of commercial bank advances to agriculture per capita			16.42	13.84
real per capita regional rural bank credit			8.78	7.35
Percentage of Irrigated Agricultural Land	1971-1993	IFPRI	30.65	20.8
per capita state agricultural domestic product '00000Rs	1971-1996	Central Statistical Organisation and Indian Statistical Institute	1.864	0.947
log state domestic product of manufacturing			0.69	1.29
log state domestic product of registered manufacturing			0.12	1.45
log state domestic product of unregistered manufacturing			-0.25	1.18
log per capita state trade, hotel and restaurants domestic product			1.68	0.74
log per capita state banking and insurance domestic product			0.42	1.04
log per capita state real estate domestic product			0.06	0.88
Urban Head Count Index (percentage)	1958-1992, 1994	"A database on Poverty and Growth in India", prepared by Ozler, Datt, Ravallion (1996)	41.2053	13.5433

Chapter 4

The Benefits and Costs of Microfinance: Evidence from Bangladesh.

4.1 Introduction

Advocates of microfinance support the view that it could break the vicious cycle of poverty. The Grameen Bank in Bangladesh, one of the flagship programs, reports that:

> "It is estimated that the average household income of Grameen Bank members is about 50 percent higher than the target group in the control village, and 25 percent higher than the target group non-members in Grameen Bank villages."[1][2]

This statement is however subject to two important criticisms concerning program evaluation. First, the placement of the program is non-random. Comparing Grameen Bank members to the target group in control villages would isolate the impact of microfinance as well as systematic differences between villages[3]. Second, the attribution of loans is on a voluntary basis. People self-select in microfinance. It might be that people

[1] http://www.grameen-info.org/bank/bcycle.html

[2] The target group is the group of people with less than 0.5 acres of land, which is the eligibility condition for microfinance.

[3] For example, if the program was first placed in villages where people would benefit more from the program, such a comparison could yield a positively biased result.

who try to obtain a loan differ in a systematic way from people who do not attempt to get a loan. Comparing Grameen Bank members to the target group in Grameen Bank villages would isolate the impact of microfinance as well as systematic differences between these two groups (such as entrepreneurial skills for example). In this paper, I use a large survey collected in Bangladesh in 1992/93, containing information on ineligible as well as eligible individuals, participants and non participants, treatment and control villages. I use the matching technique to adjust for differences in pre-treatment characteristics between treatment and non-treatment groups by pairing each treated individual to a non-treated unit with the "same" observable characteristics. Given the assumption that relevant differences between two groups are captured by their observable characteristics, the average outcome experienced by the matched pool of non-treated individuals identifies the counterfactual outcome the treated units would have experienced had they not been treated. I use this technique to compare Grameen Bank members to the target group in the control village and to the target group non-members in Grameen Bank villages.

Microfinance has often been described as a win-win programme. Dr Muhammad Yunus, the founder of the Grameen Bank, has recently received the Peace Nobel Prize "for their efforts to create economic and social development from below". Evaluating the benefits of microfinance is therefore a topic of first-order importance. Theoretically, it is quite clear that access to credit for the poor is key to economic development. The reluctance of banks to lend to people without collateral could cause poverty traps (Banerjee and Newman, 1993). Finding ways to give loans to poor people without collateral could lift a country out of poverty. Microfinance is based on the voluntary formation of small groups of five people to provide mutual, morally binding group guarantees in lieu of the collateral required by conventional banks. This mechanism has allowed the Grameen bank to experience repayment rates of up to 95%. Grameen has been replicated worldwide and has inspired over 7,000 microfinance institutions in Latin America, Africa, and

Asia serving 25 million poor clients. Access to credit could increase expenditure of participants by encouraging projects start-up and raising labor supply. It could also increase child enrolment in school if the opportunity cost of school decreases due to increased parental wealth.

The empirical evidence is much less clear. Using the Bangladesh data set I refered to, Pitt et al (1998) use an identification strategy based on a discontinuity contained in the Grameen Bank's eligibility rules for programme participation (people with less than half an acre of land are eligible). The discontinuity rule evaluation compares individuals just above and below the eligibility rule. It concluded that programme participation raised household consumption by 18 Takas for every 100 Takas lent to an individual woman.

However, Morduch (1998) points out that the discontinuity rule is not respected in practice. Indeed, almost 25% of participants are mistargeted in the sense that they own more than 0.5 acres of land. Morduch points to one participant possessing 13.4 acres of land. This analysis casts doubt on Pitt and Khandker's results. Morduch prefers a simple difference-in-difference approach comparing eligible to ineligible in treated villages to the same difference in control villages. He finds no significant effect resulting from microfinance exposure. In his response to Morduch, Pitt (1999) noted however that this difference-in-differences approach fails to deal with the key issue of programme placement. If the Grameen Bank focuses on areas where inequality between rich and poor is greatest, Morduch's estimate will be biased downwards.

In contrast to these two papers, I use the matching technique to compare outcomes of Grameen Bank members to the target group in control villages and to the target group non-members in Grameen Bank villages. This technique relies on two identification assumptions. First, the Conditional Independence Assumption (CIA) states that non-treated outcomes are what treated outcomes would have been had they not been treated conditional on a set of observables. I am unable to test this hypothesis directly but I use different set of observables to provide a convincing set of observables. Sec-

ond, the Common Support hypothesis states that there exists a set of individuals where all treated agents have a counterpart in the non-treated population and anyone constitutes a possible participant. I am able to test this hypothesis. I find that microfinance increased expenditure of participants by 3% compared to expenditure of matched individuals in control villages. On the other hand, I did not find any significant differences between participants and non-participants in villages with microfinance. This indicates the presence of positive externalities of microfinance at the level of villages I also find that microfinance does not act as a consumption smoothing mechanism, that males and females increased their labor supply and that enrolment of boys and girls increased due to microfinance.

The paper's structure is as follows. section 4.2 will describe the data used. section 4.3 will describe matching technique. section 4.4 will present the preferred specification and results. section 4.5 concludes.

4.2 Data

In this paper, I use a large survey collected in Bangladesh in 1992/93. Figure 4.1 describes the data set used. Group A corresponds to ineligible individuals in villages having access to microfinance whereas group B corresponds to ineligible individuals in villages without microfinance. Group C corresponds to eligible individuals who choose not to participate and group D to eligible individuals who choose to participate in villages where microfinance is available. Group E includes eligible individuals in villages without microfinance.

The question of whether microfinance is beneficial to customers is a typical evaluation problem. The objective here is to identify the average effect of participation in microfinance on, for example, expenditure, in cases where people have access to the former. A participant's expenditure should be compared to a counterfactual expenditure– i.e. that of the same individual in the same situation at the same time without access to

microfinance. Since the counterfactual is never observed, even with individual panel data observations, it must be estimated. Ideally, an experiment would randomly assign loans to people and compare average outcomes of groups with and without loans. Lacking a controlled randomised experiment, we must turn to non-experimental methods that mimic it under reasonable conditions.

One should not estimate microfinance's impact by differentiating expenditure between group D participants and group C non-participants. Such a difference would be misleading due to problems of self-selection. People self-select in microfinance programmes. This difference would measure entrepreneurial skills as well as microfinance impact. Equipped with such skills, participants might have done better with or without microfinance.

Pitt et al (1998) use a regression discontinuity design based on the eligibility rule. Arguing this rule is not respected, Morduch (1999) uses a simple difference-in-difference approach by comparing C+D to A, to E to B, and finds no significant effect resulting from microfinance exposure. Pitt (1999) noted however that this difference-in-differences approach fails to deal with the key issue of programme placement. Other Evaluation Techniques cannot be used in this context. Zaman (2000) uses the number of eligible households in each village in 1992 as an instrumental variable. The rationale behind this is that while a larger number of potential members in a village will reduce the likelihood of eligible households from participating in microfinance, it is difficult to see why this variable should affect the poverty status of households. I have tested if the number of eligible households in each village in 1992 is correlated with participation in microfinance but not with the outcomes presently under consideration. It is not a significant variable in the participation equation. It is not correlated with the following outcomes: woman non-land assets and woman labour. It is however correlated with logarithm of expenditure per capita, male labour and male and female school enrolment. This instrumental variable is therefore not appropriate in this context.

Another method often used in the evaluation literature is the difference-in-differences

strategy: it compares participating and non-participating individuals, before and after treatment occurs. However, pre-programme observations are unavailable in the data set and the difference-in-differences technique cannot be applied.

Given the failure of traditional empirical strategies to appropriately measure microfinance's impact in this context, I will now turn to the technique of matching. It is preferable in this context since no clear criteria are available to explain the participation of individuals in microfinance. Indeed, the 0.5 acre eligibility cut-off is not respected in practice and participation in microfinance is voluntary. Comparing individuals across villages is also erroneous given the existence of non-random programme placement. In light of these difficulties, matching is preferable since it 'builds' an appropriate counterfactual for each participant.

4.3 Methodology

Statistical matching adjusts for differences in pre-treatment characteristics between treatment and non-treatment groups by pairing each treated individual to a non-treated unit with the "same" observable characteristics. Given the assumption that relevant differences between two groups are captured by their observable characteristics, the average outcome experienced by the matched pool of non-treated units/individuals identifies the counterfactual outcome the treated units would have experienced had they not been treated.

Matching's two assumptions are:

- the Conditional Independence Assumption (CIA): it is a condition on the set of observables X. Non-treated outcomes are independent of the participation status:

$$Y_0 \perp D|X$$

for $X_i \in S$, S being defined in the next assumption. In other words, non-treated outcomes are what treated outcomes would have been had they not been treated.

- The Common Support (set S): all treated agents have a counterpart in the non-treated population and anyone constitutes a possible participant:

$$P(D=1|X)<1$$

for $X_i \in S$.

Upon verification of these two assumptions, matching appears well-suited to deal with potential bias. This is made clear by decomposing the treatment effect in the following way:

$$E(Y_1-Y_0|X,D=1)=\left[E(Y_1|X,D=1)-E(Y_0|X,D=0)\right]-\left[E(Y_0|X,D=1)-E(Y_0|X,D=0)\right]$$

The first term is observed, while the second is called the bias conditional on X. Three causes of bias may occur when estimating the average treatment on the Treated. Following Heckman's analysis (1997), there may, first, be a difference in the support of X in the two groups: individuals in both would be systematically different. Matching only on Common Support eliminates this bias. Second, there may be a difference between the two groups in the distribution of X over its Common Support. This bias is eliminated since matching reweighs D=0 data in order to equate the distribution of X in the D=1 sample. Third, there may be a bias due to unobservables. The magnitude of that bias will depend on the adequacy of the CIA assumption in the specific problem.

The advantages of matching are that selection on observables is controlled for, it is a semi-parametric technique (functional form for the comparison of outcome is not specified), and that only individuals on the common support, in other words comparable, are compared. Its disadvantages are that selection on unobservables is not controlled

for and that the hypothesis of Common Support can be restrictive. A critical step in matching technique is therefore the choice of the X's. Any variable that is thought to influence both participation and outcome is to be included[4]. In the results section I will present three different specifications in the choice of Xs and justify the choice of the preferred specification. Another disadvantage of matching is the curse of dimensionality. It can be very time and effort consuming to match on a number of X's. Rosenbaum and Rubin (83) demonstrated that if $(Y_1, Y_0 \perp D|X)$ for X in S (the Common Support), and $0 < P(X) < 1$ for X in S then $(Y_1, Y_0 \perp D|P(X))$ for X in S. This solves the curse of dimensionality: individuals can be matched on $P(X)$ instead of X. This is called propensity-score matching.

Each treated individual must be then paired with a group of comparable non-treated individuals (depending on the matching technique). The outcome Y_i of individual i is associated with a matched outcome $\widehat{Y_i}$ equal to a weighted outcome of each component of a comparison group:

$$\widehat{Y_i} = \sum_{j \in C^0(p_i)} w_{ij} Y_j$$

Where $C^0(p_i)$ is the set of neighbours of treated individual i in the D=0 group and w_{ij} is a particular weight associated with outcome Y_j.

I use four matching techniques:

- Nearest Neighbour: treated unit i is matched to non-treated unit j such that:

$$\left|p_i - p_j\right| = \min_{k \in \{D=0\}} \left\{p_i - p_k\right|\}$$

[4]It is interesting to note that we need variables good enough to provide a reasonable explanation of participation but not too good, since in cases where a certain X allowed us to discriminate perfectly between participant and non-participant, then a regression discontinuity design with such a variable would be more appropriate than matching technique.

The drawback of this technique is that the assumption of Common Support is not imposed: two observations with a very big difference in their propensity scores could be matched if this difference is the lowest among the comparison group.

- Caliper Matching: for $\delta>0$, i is matched to j such that:

$$\delta > \left|p_i - p_j\right| = \min_{k \in \{D=0\}} \left\{p_i - p_k\right|\}$$

This technique imposes the Common Support hypothesis as opposed to Nearest Neighbour.

- Stratification: for a prespecified length of a stratum, the matched outcome is the arithmetic average of the outcome of the individuals in the stratum.

- Kernel Matching: here we consider all observations with a decreasing weight with the distance between two observations:

$$\hat{y}_i = \frac{\sum_{j \in \{D=0\}} K\left(\frac{p_i - p_j}{h}\right) y_j}{\sum_{j \in \{D=0\}} K\left(\frac{p_i - p_j}{h}\right)}$$

I have chosen here a gaussian K: $K(u) \propto \exp(-u^2/2)$ which takes into consideration all non-treated units.

The average treatment of the treated (ATT) is then:

$$ATT = \sum_{i \in \{D=1 \cap CS\}} (y_i - \hat{y}_i)\omega_i$$

Where ω_i=1/(number treated within the common support)

These four techniques should be compared. The Nearest Neighbour technique must be considered very carefully since it violates the Common Support hypothesis. Even if there is no comparable "enough" unit, this technique will provide an estimate. We should not be overly attentive to the results of this estimate. Imposing a caliper is more appropriate but remains imprecise compared to stratification and kernel techniques since only one individual is matched with each participant. Stratification technique uses an average of several individuals as a matched individual. However, equal weight is given to an individual at the limit of the stratum and to an individual close to the observed unit, since the average is only arithmetic. The kernel estimation gives each individual a weight decreasing in distance compared to the unit being studied. The kernel estimation does not impose per se the Common Support hypothesis, since all individuals in the comparison group are used, though it is very precise, since several individuals with the proper weights are used in the matched outcome. The stratification and kernel techniques should therefore be preferred for these reasons. I will present only those results obtaining from these two estimation techniques.

Additional sources of variability are introduced by estimating the propensity score and by the matching process. We need therefore to obtain bootstrapped confidence intervals for the matching estimates, as there is no asymptotic distribution theory for these estimates.

What follows summarises my chosen methodology. The average outcome experienced by the matched pool of non-treated units identifies the counterfactual outcome the treated units would have experienced had they not been treated under the following assumptions: (1) relevant differences between the two groups are captured by their observable characteristics (in other words, the right set of Xs described in the next section and included in the propensity score), and (2) treated individuals are matched with non-treated individuals on a Common Support (which is why we will only consider stratification and kernel techniques).

4.4 Results

The first practical step of a matching analysis is the computation of its propensity score using the right set of Xs. Once the preferred specification has been chosen, I will then be able to obtain matching results of the benefits of microfinance.

4.4.1 Propensity score

The left hand side variable is a variable that takes value 1 when individuals participate in microfinance, 0 otherwise. I will use a logit specification as the outcome is a binary variable. The predicted probability of each individual will then be its propensity score. The intuition for this technique is that two individuals with the same propensity scores, one participating in microfinance, the other not, will have no systematic differences beyond participation in microfinance. The difference in outcomes is due to microfinance and nothing else. The propensity score is crucial in this analysis since the key drawback of matching is that only selection on the observables X may be controlled for. Any variable influencing both participation and outcomes should be included. To deal with this problem, I will use three different specifications. First, I will consider the specification used in Pitt (1998). I will then include variables that could be relevant to the participation decision in specification 2 in order to maximise the R^2. Finally, I will keep the most relevant variables in specification 3 in order to maximise the number of kept observations. The difference between specifications 2 and 3 illustrates the trade-off between explanatory power and multicollinearity. Village dummies are included in the three specifications.

Table 4.1 presents the results of this propensity score estimation. Column 1 presents descriptive statistics of each variable. Column 2 of Table 4.1 presents results from the first specification. The explanatory power of the specification used by Pitt and Khandker is limited. The Pseudo-R^2 of the participation regression is only 0.1502. The propensity score coming from this specification will lack accuracy. Column 3 presents the results from Specification 2. I include in this specification every variable that could be thought of

as having an impact on either participation or an outcome of interest. The R^2 is 0.3561. A surprising result in this specification is that the Highest Grade Completed is not correlated to participation. However, this variable was very seldom measured in the data set and varies from one round to another for the same individual. I replace it with a dummy variable indicating whether the individual went to school or not, less precise but also less prone to measurement error in Specification 3. The coefficient preceding this variable is now positively significant in Specification 3, as shown in Column 4. The coefficient preceding gender is significantly negative since women are given preferential treatment in regards to loans by microfinance institutions. Individual age is positively correlated with participation. This surprising result can be refined by introducing non-linear age variables. Individual age to the square and to the fourth is significantly negative in specifications 2 and 3. This indicates that older individuals are more likely to participate but with diminishing career concerns. In Specifications 2 and 3, I include variables that might influence both participation and outcomes. Individuals with savings, livestock or non-farming enterprises are more likely to participate in microfinance. This suggests that even though the Grameen Bank targets the poor, it is not the poorest who participate. It also highlights the fact that it is important to control such variables when evaluating propensity scores in order to match comparable individuals. That the coefficient of agricultural wages is positive and that of non-agricultural wages is negative may suggest that the Grameen Bank targets agricultural professions. To conclude, Specification 3 should be preferred since more observations are kept and the pseudo-R^2 is high.

The second step is to predict the propensity score of each individual. I graphed the distribution of participants' propensity scores according to Specification 1 in Figure 4.2. It is easy to compare it with Figure 4.3, which plots the distribution of propensity scores for non-participants in villages with microfinance. The distribution in Figure 4.3 is more tilted to the left than was expected: non-participating individuals have low scores. Figure 4.4 shows the same distribution for individuals in villages without microfinance.

This group appears promising in regards to the breadth of Common Support: these villages contained people who would have chosen participation and are therefore much more comparable to participants. Figures 4.5, 4.6 and 4.7 plot the same distribution according to Specification 3. The fact that the latter possesses more explanatory power than Specification 1 can be seen in the first two graphs: the distribution of the propensity score for participants is more spread out than in Specification 1. Specification 3 should be preferred. Common Support is greater with individuals in villages without microfinance. However, two modifications should be added here. First, the propensity score must be corrected. Village dummies were included in the logit specification. I estimate a 'corrected' propensity score by equating all village variables to zero for individuals with access to microfinance in order to make it comparable to individuals without such access. Figures 4.8, 4.9 and 4.10 present the distribution of the corrected propensity score for participants, nonparticipants in villages with microfinance and people without such access. Second, I purge the logarithm of per capita expenditure from village effects. I regress this quantity on village dummies from both the programme and control villages only and estimate the residual arising from this regression. I call this quantity the "pure" logarithm of per capita expenditure since it is now freed from all village level effects.

To conclude, the preferred specification is Specification 3 because it includes more observations and maximises the pseudo-R^2. In order to match treated individuals with individuals in villages without microfinance, I predict the propensity score without considering village dummies. To account for non-random programme placement, I purge every outcome of village fixed effects. With this preferred specification, I will now present matching results.

4.4.2 Matching Results

Matching results are presented in Table 4.2. Two observations can be made about choice of specification and choice of matching strategy. First, I have already stated that Speci-

fication 3 should be preferred since more observations are kept and the model's explanatory power is greater. Pitt's specification (1998) has limited explanatory power, having a pseudo-R^2 of 0.1502. Its propensity score thus lacks accuracy. The consequence of Specification 1's inadequacy is visible in the insignificance of the results. I therefore prefer to exploit a more exhaustive specification called Specification 2. The pseudo-R^2 is 0.3561. Although insufficient, this figure is quite high. An even better specification is Specification 3. The variables used were significant and as many observations as possible were conserved. With Specification 2, only 425 participants are matched due to missing variables. In Specification 3, 703 out of 705 participants are included. We should therefore only consider the results of Specification 3. The second point pertains to choice of matching strategy. The Nearest Neighbour technique warrants careful consideration. This technique violates the Common Support hypothesis. Even if there is no comparable 'enough' unit, the technique will provide an estimate. We should not linger over the results of this estimator. Imposing a caliper is more appropriate but remains imprecise compared to stratification and kernel techniques. Stratification technique gives equal weight to individuals at the limit of the stratum and to individuals close to the observed unit. A better technique is kernel estimation: an individual receives a weight decreasing in distance compared to the unit studied. I only present results arising from stratification and kernel techniques.

The first row contains results comparing expenditure of participants to expenditure of matched non-participants in treated villages. The difference in expenditure is negative, contrary to prior expectations but not very significant. This may indicate the presence of positive externalities resulting from microfinance. Non-participants in treated villages do not fare worse than participants. In the second row, I compare participants and non-participants in control villages. The propensity score is corrected and per capita expenditure are purged from village level effects to take into account non-random program placement and according to the procedure described earlier. The results of the stratifi-

cation technique are significantly positive. The kernel estimate results are significantly positive and very close to those of stratification. The former are very robust in regards to bandwidth changes. The kernel estimate is about 0.028 and significant at the 1% level. It is a matter of comparing the logarithm expression of the per capita expenditure. This means that a participant would be able to spend 3% more than a comparable individual in a control village. Individually, this means that on average people earn 250 Takas more than non-participants. The monetary value of such an improvement can be calculated for each individual as in the previous description. This benefit can be divided by the amount of each individual's loan: the average of this variable is 0.028. This means that out of a 100 Taka loan, people may spend 2.8 Takas more. This result is inferior to Pitt's (1998) in that the analysis was potentially biased positively. Indeed, as Morduch (1999) showed, the 0.5 acre eligibility rule was not enforced. Using a regression discontinuity design, one can then compare individuals with landholdings just below 0.5 acres to individuals whose landholdings are just above 0.5 acres. However, as Morduch (1999) also showed, a number of individuals with landholdings greater than 0.5 acres actually received microfinance loans. There is no participation discontinuity in the 0.5 acre programme. The two conditions for a successful regression discontinuity design are that there be a discontinuity in participation in the 0.5 acre programme but no discontinuity in the disturbance term, or unobserved heterogeneity, at this point. One can show that if the first condition is violated (no discontinuity in participation of individuals possessing 0.5 acres), then the estimated coefficient from the regression discontinuity design may be biased upwards. My result is superior to that of Morduch (1999) since the latter found the impact of microfinance insignificant. Indeed, Morduch only estimates the effect of exposure to, and not participation in, microfinance. Moreover, as Pitt showed, Morduch did not take into account non-random programme placement. Villages without microfinance may be more equal, while the poor in microfinance villages may be systematically worse off than the poor in non-microfinance villages. This will underestimate the impact of the programme.

Microfinance may impact the lives of the poor in many other ways. We can replicate our analysis with different outcomes. I will consider the six outcomes included in Pitt (1998): variation in expenditure, women's non-land assets, female and male labour supply and female and male school enrolment. I present in Table 4.3 the results comparing treated individuals with non-treated individuals in villages without microfinance, correcting for non-random programme placement in the propensity score and in the outcome, using the kernel technique.

The first result regards variation in the log of per capita expenditure. As the previous literature has shown, we find microfinance having a negative impact on expenditure variation. Microfinance has an income smoothing effect. However, the results are not very significant. Women also appear to benefit from microfinance as far as their non-land assets are concerned, which it significantly increases. Moreover, the aforementioned risk reduction would appear to result from income rather than consumption smoothing. People tend to work more when participating in microfinance. Women typically work around 80 hours more per month. This is a smaller estimate than for men, which suggests that the former's access to microfinance increases household consumption, presumably by increasing the productivity of their market time rather than by increasing the supply of that time. One possible explanation for the fact that men increase their supply of labour more than women may be found in the average size of loans available both sexes. Men tend to borrow bigger amounts. The average Grameen Bank loan to male customers was 13,642 Takas, whereas the average loan to female customers was 11,542 Takas. Men's projects tend to be bigger although the difference in loan amounts granted to female and male customers is not quite large. The last point is associated with the impact of microfinance on education. Microfinance seems to increase both male and female school enrolment. Girl's school enrolment in particular is positively affected by the participation in microfinance. Weaker results for boys may simply be a reflection of their greater initial enrolment. In fact, 60% of boys were enrolled, compared to only 56% of girls.

By comparing treated individuals to comparable individuals lacking access to microfinance, I found that certain people did indeed benefit from microfinance. However, I do not find significant differences with non participating individuals in treatement villages, pointing to the presence of externalities.

4.5 Conclusion

By comparing participants to matched individuals in non-treated villages, I found that microfinance has a positive impact on participants' expenditure, supply of labour and male/female school enrolment. Participants spend on average 3% more than non-participants. This result is inferior to that of Pitt (1998) as the latter's analysis was potentially biased upward. Indeed, as Morduch (1999) showed, the 0.5 acre eligibility rule was not enforced. Using a regression discontinuity design, individuals with landholdings just below 0.5 acres are compared to individuals with landholdings just above 0.5 acres. However, as Morduch (1999) showed, a number of individuals with landholdings greater than 0.5 acres actually received microfinance loans. There is no discontinuity in programme participation at 0.5 acres. The two conditions for a successful regression discontinuity design are that there be discontinuity in programme participation at 0.5 acres but no discontinuity in the disturbance term (unobserved heterogeneity) at this point. It can be shown that if the first condition is violated (no discontinuity in the participation of individuals at 0.5 acres), then the coefficient estimated by the regression discontinuity design is likely to be biased upwards. My result is superior to that of Morduch (1999), who found microfinance to be of insignificant impact. Morduch limited his estimation to the effect of exposure to, and not participation in, microfinance. Moreover, as Pitt showed, Morduch did not account for non-random programme placement. While villages without microfinance may be more equal, the poor in microfinanced villages may be systematically worse off than the poor in non-microfinanced villages. This will tend to underestimate the impact of the programme.

This paper finds significantly smaller estimates than previous studies or the Grameen Bank estimates. However, a word must be said regarding the limitations of this approach. Microfinance does have a number of other positive impacts not evaluated here. It empowers women who formerly restricted by social custom from working outside the home, promotes self-sufficiency and enhances education by providing training. Moreover, traditional evaluation literature focuses on the programme's direct effect and is not a general equilibrium analysis. There might be certain positive externalities to microfinance. There might also be numerous indirect effects, such as displacement effects (activities created by the programme at the expense of other jobs in the economy), substitution effects (jobs created for participants that replace those in other categories due to the change in relative wage costs), dead-weight effects (subsiding training that would have taken place in the absence of the programme), tax effects (effects of taxation on participants' behaviour). This paper does not include these effects the results of which are likely to be biased. This issue obviously depends on the size of the programme. I can argue that, in 1991/92 and according to my dataset, microfinance's outreach was quite limited and that today the ever-increasing scale of the microfinance industry makes a general equilibrium approach more interesting.

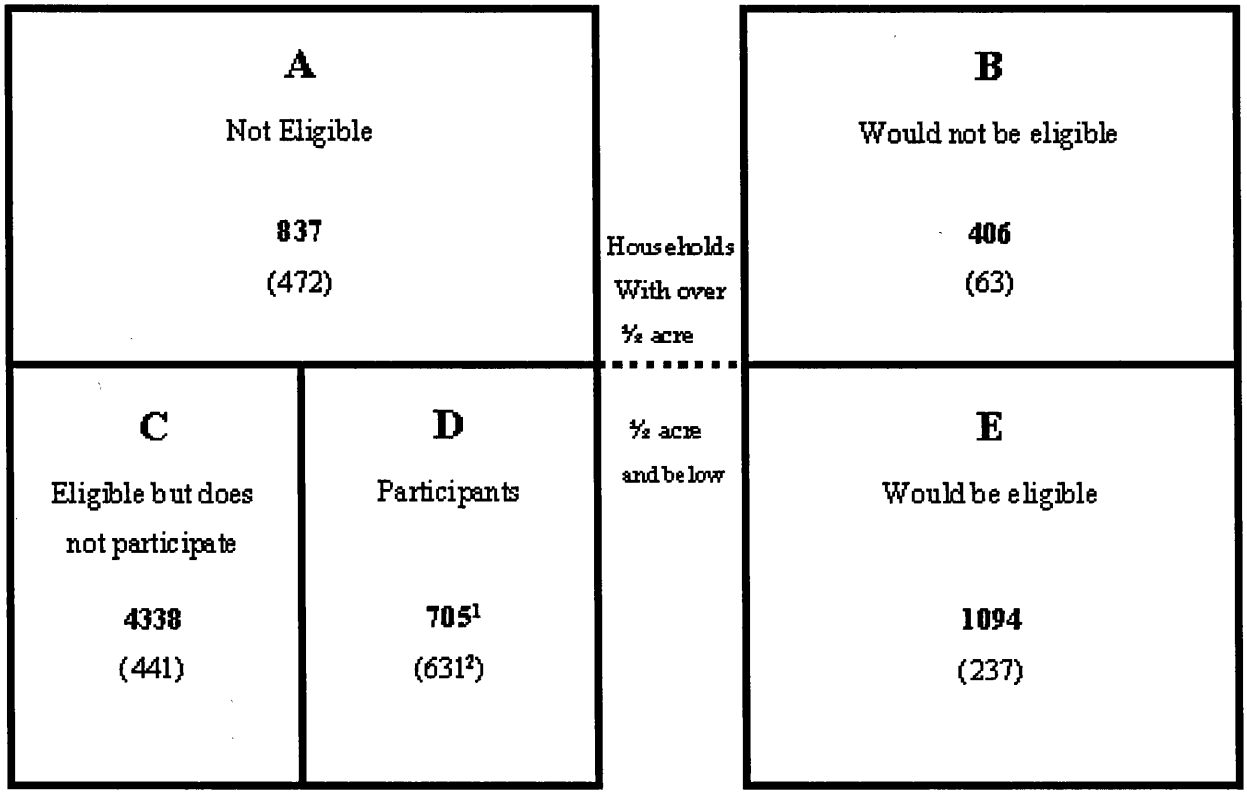

Figure 4-1: Description of the Data Set with the number of associated observations.

[4]Collected in 1991/92 by the Bangladesh Institute for Development Studies in collaboration with the World Bank, 3 microfinance programs (Grameen Bank, BRAC, BRDB), 87 villages, 15 not covered by microfinance. The number of individuals are in bold and the number of households in brackets. The number of observations are estimated with de jure definitions (see Morduch). We are pooling over the three rounds the participants (to oversample participants).

[1] Total number of participants using de facto definitions: 936

[2] Total number of households participating using de facto definitions: 827

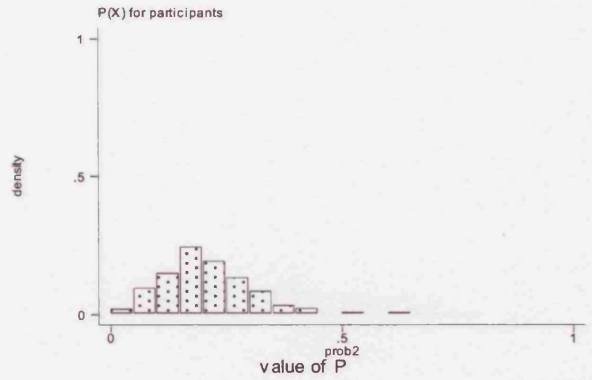

Figure 4-2: Distribution of the propensity score for participants according to specification 1.

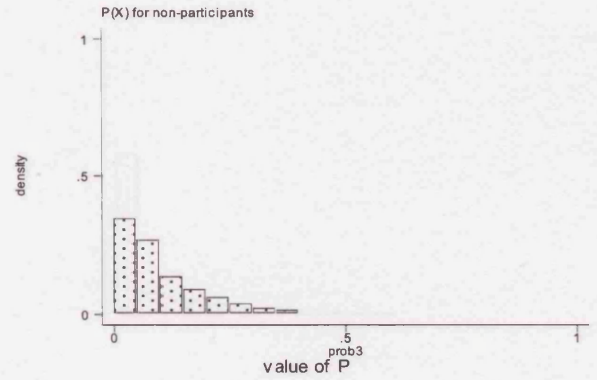

Figure 4-3: Distribution of the propensity score for non-participants in villages with access to microfinance according to specification 1.

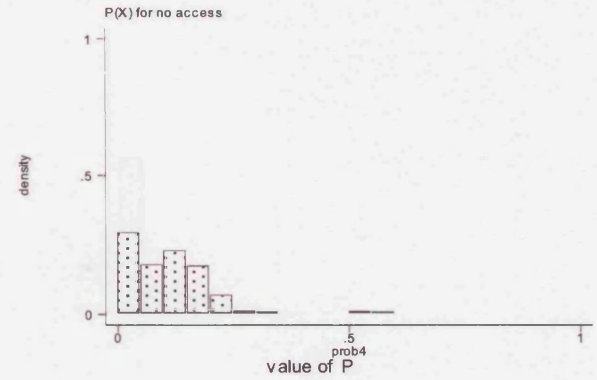

Figure 4-4: Distribution of the propensity score for individuals in villages without access to microfinance according to specification 1.

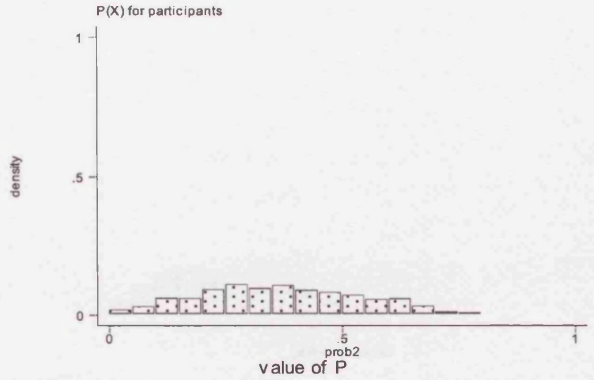

Figure 4-5: Distribution of the propensity score for participants according to specification 3.

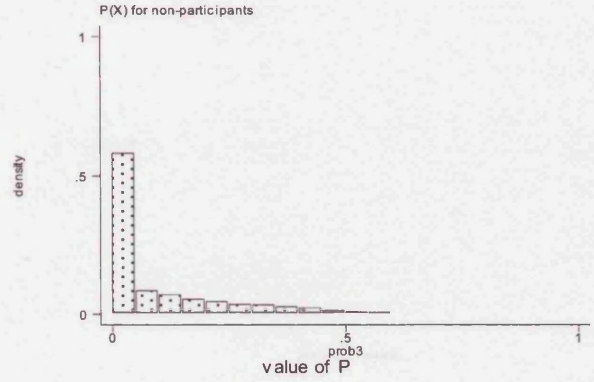

Figure 4-6: Distribution of the propensity score for non-participants in villages with access to microfinance according to specification 3.

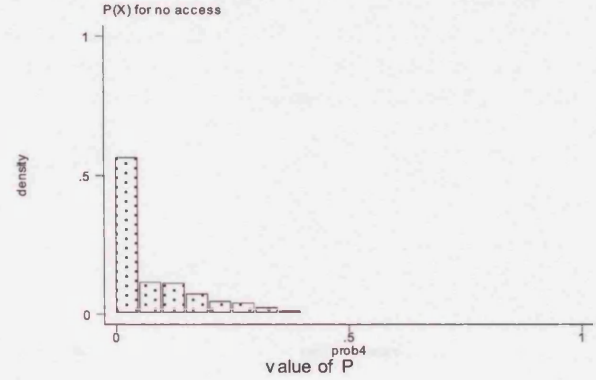

Figure 4-7: Distribution of the propensity score for individuals in villages without access to microfinance according to specification 3.

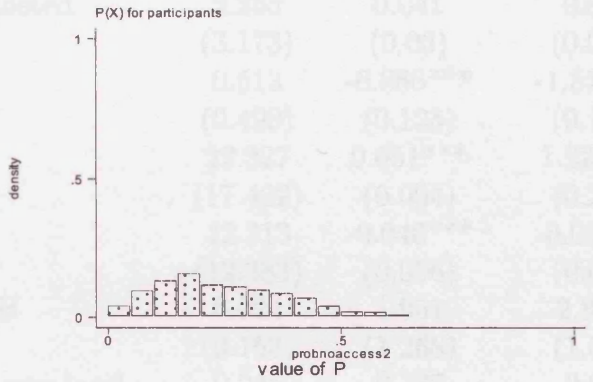

Figure 4-8: Distribution of the corrected propensity score for participants according to specification 3.

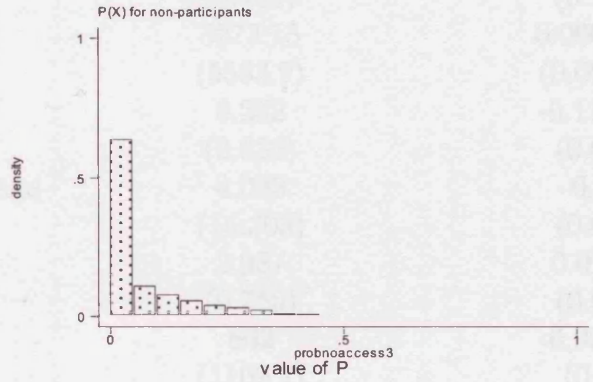

Figure 4-9: Distribution of the corrected propensity score for non-participants in villages with access to microfinance according to specification 3.

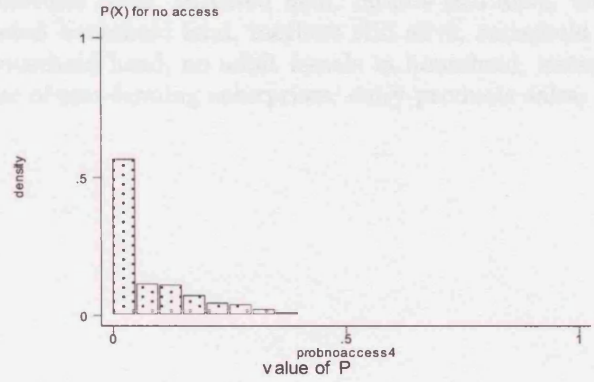

Figure 4-10: Distribution of the corrected propensity score for individuals in villages without access to microfinance according to specification 3.

Table 4.1: Propensity Score Estimates: Determinants of the Probability of Participation

Independent Variables	Means	Spec. 1	Spec. 2	Spec. 3
Highest Grade Completed	2.255	0.041	0.024	
	(3.173)	(0.03)	(0.036)	
Sex	0.513	-0.886***	-1.515***	-1.136***
	(0.499)	(0.123)	(0.182)	(0.128)
Age	22.327	0.051***	1.224***	1.065***
	(17.422)	(0.004)	(0.269)	(0.159)
Age of HH head	42.313	-0.046***	-0.035***	-0.014**
	(12.383)	(0.006)	(0.009)	(0.006)
No Adult Male in HH	0.024	1.951	2.854*	0.832***
	(0.153)	(1.268)	(1.562)	(0.308)
Parents of HH head own land	0.246	0.137	0.094	
	(0.56)	(0.14)	(0.147)	
Brothers of HH head own land	0.714	0.019	-0.023	
	(1.224)	(0.065)	(0.068)	
Education	0.551			0.336***
	(0.497)			(0.113)
Savings	1128.9		0.0002***	0.0002***
	(4201.37)		(0.0004)	(0.00003)
Own a Non-Farming Enterprise	0.468		0.763***	0.630***
	(0.499)		(0.173)	(0.111)
Livestock Value	3273.15		0.0000397	0.00005***
	(5533.9)		(0.00003)	(0.00002)
HH size	6.232		-0.117***	-0.147***
	(2.632)		(0.041)	(0.028)
Non-Agricultural Wage	4.023		-0.002	-0.006*
	(16.303)		(0.004)	(0.003)
Agricultural Wage	2.987		0.013**	0.010**
	(9.755)		(0.007)	(0.005)
Age Squared	802		-0.033***	-0.028***
	(1109.7)		(0.01)	(0.006)
Age to the Power Four	1874542		-1.73E-6*	-1.16E-6***
	(5029988)		(0.000000944)	(0.000000501)
Village dummies	yes	yes	yes	yes
Number of Observations	9399	3319	4205	5037
Pseudo R-Squared		0.1502	0.3561	0.3313

Robust t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Specification 1 replicates the analysis of Pitt (1998). Specification 2 includes other control variables: landed assets, equipment assets, transport assets, injuries, change residence in the last 2 years, assets, expenses of the non-farming enterprises, agricultural costs, irrigated land, fathers still alive, marital status, agricultural income, mother's education, irrigated household land, mothers still alive, household land, highest grade completed by household head, sex of household head, no adult female in household, sisters of household head owning land, father's education, revenue of non-farming enterprises, dairy products sales; all insignificant.

Table 4.2: Impact of Microfinance on log of per capita Expenditure from Matching with the non participants in treatment villages and individuals in control villages using specification 3

Control group	Stratification			Kernel		
	20	10	5	0.05	0.02	0.01
non participants in treatment villages	-0.035*	-0.044*	-0.044*	-0.039*	-0.044*	-0.046*
individuals in control villages	0.028	0.028***	0.028*	0.028***	0.028***	0.028***

Estimates are bootstrapped. * significant at 10%; ** significant at 5%; *** significant at 1%. Specification 1 is the specification used by Pitt (1998), Specification 2 includes more relevant variables to maximise the explanatory power of the propensity score, Specification 3 retains the most significant variables in order to maximise observation numbers and explanatory power. I use three strata for the stratification technique of 20, 10 and 5 (the propensity score being between 0 and 100). A smaller stratum imposes the assumption of the Common Support but includes less observations. I use three bandwidths for the kernel technique of 0.05, 0.02 and 0.01. A smaller bandwidth imposes the assumption of Common Support while kernel matching converges to the nearest neighbour with decreasing bandwidths. Propensity scores are corrected for non-random programme placement by equating all village dummies to 0 for treated individuals. The outcome is purged from village level effects by regressing it on village dummies and accounting for residuals.

Table 4.3: Impact of Microfinance on 6 different Outcomes using a Kernel technique.

Outcomes	Bandwidth of kernel		
	0.05	0.02	0.01
Variation of Log of Per Capita Expenditure	-0.008	-0.008	-0.008
Log of Women Non-Land Assets	0.037	0.037	0.038
Female Labour Supply	9.503	9.507	9.521
Male Labour Supply	17.001***	16.996***	16.974***
Girl School Enrolment	0.051***	0.051***	0.052***
Boy School Enrolment	0.035*	0.035	0.036

Estimates are bootstrapped. * significant at 10%; ** significant at 5%; *** significant at 1%. Specification 3 is used. I use three bandwidths for the kernel technique of 0.05, 0.02 and 0.01. A smaller bandwidth respects the assumption of Common Support while kernel matching converges to nearest neighbour with decreasing bandwidths. Propensity scores are corrected for non-random programme placement by equating all village dummies to 0 for treated individuals. The outcome is freed from village level effects by regressing it on village dummies and accounting for residuals.

Chapter 5

Conclusion

It is well recognised today that improving the investment climate fosters productive private investment, creates jobs and is the key to sustainable growth. However, the question remains whether an improvement in the investment climate would benefit the poor. In this thesis, I focus in particular on two institutions of prime importance for small informal entrepreneurs in developing countries who lack resources and bargaining power: the courts to enforce contracts.and the financial markets to get access to credit

Chapter 2 assesses how an improvement in the investment climate can benefit the poor directly. I focus in this chapter on how slow courts can affect the lives of the poor. There were 3.1 million cases pending in India's 21 High Courts and 20 million in its subordinate courts in 2000. This chapter examines the consequences of a slow judiciary on the contracting behaviour of firms in India. I develop a game theoretical model which allows me to study how the judiciary's efficiency affects the contracting behaviour of firms. I then examine how the case pendency rate in state courts in India affects the contracting behaviour of 170,000 small non-agricultural informal firms from the 55th round of the National Sample Survey of 2000. My estimates suggest that a slow judiciary implies more breaches of contract, discourages firms from undertaking relationship-specific investments, impedes the access of firms to formal financial institutions, and favours inefficient dynasties. The negative implications of having an inefficient judiciary are large - moving a firm from the highest to the lowest pendency state would result in a 10% improvement in firm performance.

This chapter leaves an important question open. Indeed, we would like to know more about what determines the speed of the judiciary. In particular, we would like to identify specific policy measures which would enhance judicial efficiency. This is a problem both for India and for large number of other countries which would suffer from

slow courts (Djankov et al, 2003). A key implication emerging from Chapter 2 is that the quality of the judiciary has large effects on economic performance. Finding specific means of speeding up courts is therefore crucial. Chapter 3 examines the reasons as to why the judiciary is so congested in India, and why there is variation in the quality of the judiciary across 24 states between 1971 and 1996. In particular, I investigate, in a panel-data analysis, whether amendments to the Code of Civil Procedure (1908) enacted in different states between 1971 and 1996 have an effect on the expected duration of a trial in High Court. I then investigate whether the ambiguity in this code could help explain violations of precedents by High Courts and therefore this expected duration of a trial in High Court. Using these amendments and violations of precedents by High Courts that have an effect on the overall speed of the judiciary as instrumental variables, I am then able to suggest policy reforms and even interpret causally the impact of the judiciary on various economic outcomes such as access to credit markets, agricultural and manufacturing performance, and poverty

Another key feature of a good investment climate is the ability to acces credit markets. Chapter 4 examines one type of credit institution that expands access to credit for the poor: microfinance, which aims to provide credit of very small amounts to the poor, using group-lending strategies to improve the repayment rate and solve the information asymmetry problem. Microfinance has generated a lot of hope in the past few years. Proponents of this informal type of finance asserted that it would serve the poor by providing them with access to credit, thereby alleviating poverty. It would also be financially sustainable due to exceptionally high repayment rates obtained through group lending. Using the latest developments from the evaluation literature, namely the technique of matching, to evaluate carefully this credit program, this chapter shows a positive effect of microfinance on the expenditure per capita, the supply of labour, the level of enrolment in school of boys and girls. For instance, participants spend 3% more on average than non-participants. However, participants did not experience a gain com-

pared to non-participants in treatment villages. This seems to indicate the presence of positive externalities at the level of villages due to microfinance.

Bibliography

[1] Acemoglu, Daron, Johnson, Simon and James Robinson, [2001], "The Colonial Origins of Comparative Development: An Empirical Investigation", *The American Economic Review*, V.91, 1369-1401.

[2] Ahmed, R., and Hossain, M., [1990], "Development Impact of Rural Infrastructure in Bangladesh", *IFPRI research report* 83, International Food Policy Research Institute, Washington, D.C..

[3] Bertrand, Marianne, Esther DuFlo and Sendhil Mullanaithan, [2004], "How Much Should We Trust Differences-in-Differences Estimates?", *The Quarterly Journal of Economics,* 119, no. 1, 249-275

[4] Besley, T., Coate, S. [1995], "Group Lending, Repayment Incentives and Social Collateral", *Journal of Development Economics*, Vol. 46, 1-18.

[5] Besley, Timothy and Anne Case, [2000], "Unnatural Experiments? Estimating the Incidence of Endogenous Policies", The Economic Journal, 110, November, F672-F694

[6] Besley, Timothy, and Robin Burgess, [2000], "Land Reform, Poverty and Growth: Evidence from India", *Quarterly Journal of Economics*, 115, 389-430.

[7] Besley, Timothy and Robin Burgess, [2004], "Can Labor Regulation Hinder Economic Performance? Evidence From India", *The Quarterly Journal of Economics,* V.119(1), 91-134.

[8] Besley, Timothy, Rohini Pande, Lupin Rahman and Vijayendra Rao, [2004], "The Politics of Public Goods Provision: Evidence from Indian Local Government", *Journal of the European Economic Association* vol. 2 no. 2/3, 416-426.

[9] Blundell, R., Costa Dias, M., Meghir, C., Van Reenen, J. [2001], "Evaluating the Employment Impact of a Mandatory Job Search Assistance Program", *IFS WP* W01/20.

[10] Buckley, Graeme [1997], "Microfinance in Africa: Is it either the Problem or the Solution?", Department for International Development, *World Development Report.*

[11] Caselli, Francesco and Nicola Gennaioli, [2003], "Dynastic Management", *NBER Working Paper* No. w9442.

[12] Dixit, Avinash, [2003], "Trade Expansion and Contract Enforcement", *Journal of Political Economy,* V.111(6), 1293-1318

[13] Djankov, Simeon, La Porta, Rafael, Lopez-De-Silanes, Florencio and Andrei Shleifer, [2002], "The Regulation of Entry", *The Quarterly Journal of Economics,* V.117(1), 1-37.

[14] Djankov, Simeon, La Porta, Rafael, Lopez-de-Silanes, Florencio and Andrei Shleifer, [2003], "Courts", *The Quarterly Journal of Economics,* V.118(2), 453-517.

[15] Dua, Baghwan D., [1983], "A Study in the Executive-Judicial Conflict: the Indian Case", Asian Survey, Vol.33, N.4 (Apr), 463-483.

[16] Duflo, Esther and R. Chattopadhyay, [2004], "The Impact of Reservation in the Panchayati Raj: Evidence from a Nationwide Randomized Experiment", *Economic and Political Weekly*, February 2004, (2-28-04) pp.979-986.

[17] Duflo, Esther, [2005], "Why Political Reservations?", forthcoming *Journal of the European Economic Association.*

[18] Greif, Avner, [1993], "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Trader's Coalition", *The American Economic Review*, V.83(3), 525-548.

[19] Hall, R. E. and C.I. Jones, [1997], "Levels of Economic Activity Across Countries", *American Economic Review*, V.87(2), 173–77.

[20] Hall, R. E. and C.I. Jones, [1999], "Why Do Some Countries Produce so Much More Output per Worker than Others?", Quarterly Journal of Economics, V.114(1), 83-116.

[21] Hashemi, S.M., Schuler, S. [1997], "Sustainable Banking with the Poor: a Case Study of the Grameen Bank", *JSI Working Paper* N. 10, JSI research and Training institute, Washington, DC, June.

[22] Heckman, J., Ichimura, H., Todd, P. [1997], "Matching as an Econometric Evaluation Estimator", *Review of Economic Studies*, 64, 605-654.

[23] Heckman, J., Ichimura, H., Smith, J., Todd, P. [1997], "Characterising Selection Bias Using Experimental Data", *Econometrica*, 66[5], 1017-1098.

[24] Heckman, J., Lalonde, R., Smith, J. [1999], "The Economics and Econometrics of Active Labour Market Programs", in A. Ashenfelter and D. Card, eds., *Handbook of Labour Economics,* Vol. 3, Amsterdam: Elsevier Science.

[25] Kali, Raja, [1999], "Endogenous Business Network", *Journal of Law and Economic Organizations*, V.15, N.13.

[26] Khandker, S.R. [1998], "Fighting Poverty With Microcredit: Experience in Bangladesh", Oxford University Press for the World Bank, New York.

[27] Klein, Benjamin, Crawford, Robert and Armen Alchian, [1978], "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process", *Journal of Law & Economics*, V.21(2), 297-326.

[28] Knack, Stephen and Philip Keefer, [1995], "Institutions and Economic Performance: Cross Country Tests Using Alternative Institutional Measures", Economics and Politics, V.7(3).

[29] Koehling, Wolfgang, [2002], "The Economic Consequences Of A Weak Judiciary: Insights From India", *Law and Economics 0212001, Economics Working Paper Archive at WUSTL.*

[30] Kranton Rachel, [1996], "Reciprocal Exchange: A Self-Sustaining System", *The American Economic Review*, V.86(4), 830-851.

[31] La Porta, Rafael, Lopez-De-Silanes, Florencio and Andrei Shleifer, [1999], "Corporate Ownership Around the World", *The Journal of Finance*, V,LIV(2).

[32] Mauro P., [1995], "Corruption and Growth", *Quarterly Journal of Economics,* V.110(3), 681–712.

[33] Micevska Maja B. and Arnab K. Hazra, [2004], "The Problem of Court Congestion: Evidence from Indian Lower Courts", ZEF-Discussion papers on development policy, N.88, July.

[34] Moog, Robert S., [1998], "Elite-Court Relations in India: an Unsatisfactory arrangement", Asian Survey, V.38, N.4 (Apr), 410-423.

[35] Morduch, J. [1998], "Does Microfinance Really Help the Poor? New Evidence from Flagship Programs in Bangladesh", Department of Economics and HIID, Harvard University, June.

[36] Morduch, J. [1999], "The Role of Subsidies in Microfinance: Evidence from the Grameen Bank", *Journal of Development Economics*, Vol. 60 [1999], 229-248.

[37] Morduch, J. [2000], "The Microfinance Schism", *World Development Report.*

[38] Mosley, Paul and Hulme, David [1998]. "Microentreprise Finance: is there a Conflict between Growth and Poverty Alleviation?", *World Development Report.*

[39] Moulton, Brent, [1990], "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units", *The Review of Economics and Statistics*, V.72(2), 334-338.

[40] North, Douglass C., [1990], "Institutions, Institutional Change, and Economic Performance", *Cambridge University Press*, New York.

[41] Pagano, Marco, Bianco, Magda and Tullio Jappelli, [2002], "Courts and Banks: Effects of Judicial Enforcement on Credit Markets" *CEPR Discussion Paper* no. 3347, forthcoming in *the Journal of Money, Credit and Banking.*

[42] Pande, Rohini [2003], "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities?", *American Economic Review* vol. 93 no. 4, 1132-1151.

[43] Pitt, Mark and Shahidur Khandker [1998], "The Impact of Group-Based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter?", *Journal of Political Economy*, Vol. 106[5] [Oct. 1998], 958-996.

[44] Pitt, Mark, [1999], "Reply to Jonathan Morduch's "Does Microfinance Really Help the Poor? New Evidence from Flagship Programs in Bangladesh", October 14, 1999.

[45] Rajan, Raghuram and Luigi Zingales, [1998], "Financial Dependence and Growth", *The American Economic Review*, V.88(3), 559-586.

[46] Rodrik, Dani, Subramanian, Arvind and Francesco Trebbi, [2002], "Institutions rule: The Primacy of Institutions over Geography and Integration in Economic Development".

[47] Rosenbaum, P., Rubin, D.B. [1983], "The Central Role of the Propensity Score in Observational Studies for Causal Effects", *Biometrika*, 70, 41-55.

[48] Sianesi, B. [2001], "An Evaluation of the Swedish System of Active Labour Market Programmes in the 1990s", *IFS WP* W02/01.

[49] Subbarao, K., Aniruddha Bonnerjee, Jeanine Braithwaite, Soniva Carvalho, Kene Ezemenari, Carol Graham, Alan Thompson, 1997. "Safety Nets Programs and Poverty Reduction: Lessons from Cross-Country Experience", A Directions in Development Books. Washington, D.C., Worldbank.

[50] Zaman, Hassan. [2000], "Assessing the Poverty and Vulnerability Impact of Micro-Credit in Bangladesh: a Case Study of BRAC", *World Development Report*, World Bank.